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The Search after Truth

Edited by
Thomas M. Lennon
and Paul J. Olscamp

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NICOLAS MALEBRANCHE
The Search after Truth

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NICOLAS MALEBRANCHE

The Search after Truth

TRANSLATED AND EDITED BY
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Elucidations of The Search after Truth

TRANSLATED AND EDITED BY
THOMAS M. LENNON

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Introduction

Nicolas Malebranche shared the birth and death dates of the Sun King, Louis XIV: 1638–1715. The happenstance is suggestive. Malebranche may be regarded as the philosopher of French classicism as Hardouin-Mansart was its architect, Le Notre its gardener, Lebrun its painter, and Molière, Racine, and Corneille its playwrights. The same sharp division between kinds, the conceptual angularity, as it were, and precise definition for beginnings and conclusions of every sort that characterized the work of these classicists is to be found also in the philosophy of Malebranche. The clear distinction that he sought between mind and body, reason and sense, grace and nature, God and man, theology and philosophy yield a view of the world so spare and precise that, for all its comprehensiveness, can only be described as classical.

Certainly, these terms of clear division distinguish Malebranche from Leibniz, for example, whose preference for the curved over the rectilinear, for gradation and continuity over division and discreteness, made him rather the philosopher of the baroque. Most of Leibniz's years also fell within the Sun King's span, and there were sufficient rationalist similarities between him and Malebranche that they competed for preeminence in this heyday of rationalism. In the event, it was Malebranche who prevailed—at least during that time and for some time thereafter, not least of all for the reason that he did express the classicism of the era.[1]

Malebranche was born into a prosperous family, the youngest of thirteen children. His father was a kind of tax-farmer, among other state occupations, and was ennobled the year of Malebranche's birth. The family was very much in the ascendancy, financially and socially, during Malebranche's childhood. But he himself was less lucky, having been born with a curvature of the spine and sunken chest that complicated his health. His constitution in childhood was so frail that a private tutor was required for his education. Only at age sixteen was he strong enough to leave the home, to enroll at the Collège de La Marche. Although originally destined by his family for the law, he went from there to the Sorbonne, completing his studies in scholastic philosophy and theology, none of which, however, was much to his liking.

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[1] See Gilles Deleuze, *The Fold: Leibniz and the Baroque* (Minneapolis, University of Minnesota Press, 1994), especially p. 135. Although he uses the term baroque in the rather different sense of Carl J. Friedrich, Craig Walton draws attention to both the dichotomies in Malebranche and his coincidence with Louis XIV in *De la recherche du bien: A Study of Malebranche's Science of Ethics* (The Hague, Martinus Nijhoff, 1972), pp.3–4.

In 1660, soon after the death of his parents, Malebranche entered the Oratory, where he was to remain until his death fifty-five years later. The Oratory was a community of ecclesiastics founded by Cardinal Bérulle as part of the French effort at reform from within the Catholic Church. While aimed at promoting piety, the Oratory did not require of its members the sort of discipline exacted by the rules of monastic orders, and in nonreligious intellectual matters the attitude was one of openness and toleration. The Oratory was approved by the Pope in 1613, and by 1615 the first of its schools had opened—schools that succeeded and proliferated to such an extent that they came to rival those of the Jesuits. Initially the Oratory found royal favor, but by the time Malebranche joined, it had become associated with both Cartesianism and Jansenism, both of which were then viewed as threatening the infrastructure of the French state. These associations were exploited by the Jesuits, and by the late 1670s, with the Oratory close to being suppressed, Malebranche considered leaving. The crisis was abated when certain members were driven out, an upheaval whose effects Malebranche was not entirely to escape.

Perhaps the most important year in Malebranche's life was 1664, when he was both ordained a priest and converted to a new philosophy. His ordination was to be expected, but his discovery of Descartes was so dramatic, at least according to his first biographer, that the retelling of its story has been *de rigueur* in the literature ever since. It seems that while walking the *quai des Augustins,* or perhaps the *rue St. Jacques*, Malebranche came across a bookseller who in response to his request for something new put in his hands Descartes's *Treatise on Man.* "The joy of learning about so many recent discoveries caused him such violent palpitations of the heart that he was forced to put the book down and interrupt his reading in order to breathe more easily."[2]

What had he picked up that might have occasioned such cardio-pulmonary enthusiasm? The *Treatise on Man* is one of two surviving parts of what was intended to be a single work that would, as Descartes boasted in correspondence, "explain all the phenomena of nature, i.e. all of physics."[3] As the well-known story has it, Descartes learned of the Church's condemnation of certain of Galileo's views and decided therefore not to publish his own. The manuscript was found among his other papers in Stockholm after his death there in 1650, and was published by his literary heir Claude Clerselier in 1664.[4] This first appearance of the

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[2] André, p. 12. See Further reading, pp. xxvi–xxvii, for this and other shortened titles below.

[3] To Mersenne, 13 November, *The Philosophical Writings of Descartes*, trans. J. Cottingham, R. Stoothoff and D. Murdoch (Cambridge, Cambridge University Press, 1991), vol. 3, p. 7.

[4] See Descartes, *Treatise on Man*, translation and commentary by Thomas Steele Hall (Cambridge, Harvard University Press, 1972), p. xxiv.

French text would have thus been a recent publication when it found its way into the hands of Malebranche.[5] The edition is also of interest since it contains illustrations and notes by the physician Louis de La Forge, whose *Traité de l'esprit de l'homme* of two years later was to be an important source for Malebranche's doctrine of occasionalism.

What Malebranche would have found in Descartes's treatise is a mechanical account of human physiology. By the slim means of a homogeneous matter whose motion changes upon contact, Descartes attempted to explain the entire working of the human body. Although certain topics such as excretion and reproduction are either given short shrift or ignored altogether, others such as the circulation of the blood, the operation of the muscles and nerves, and sensation are treated at length. The physiology of vision is given special attention. The obvious significance of this mechanical physiology is that it would have upset the basis for the scholastic theories of matter and form in which Malebranche had until then exclusively been trained. A new world was opened to him. Certainly, the range of Descartes's topics and his principles in dealing with them were immediately embraced and never relinquished by Malebranche.

What kind of picture might we form, literally and otherwise, of this man? Malebranche's modesty was such that he long refused the entreaties of friends to sit for a portrait, to the extent that they resorted to ruse. A portraitist was engaged and sent to Malebranche under pretext of presenting problems in geometry for his solution. While Malebranche was working on them, the draft portrait was done, to be completed later; but when with the ruse discovered and the likeness remarked, Malebranche agreed reluctantly to sit. In the end, we possess at least a few portraits, in oil, pencil engraving, and lithograph, the best of which is the painting by Santerre, done in 1713, two years before Malebranche's death. This portrait largely confirms a number of physiognomical features that are ascribed to Malebranche by written descriptions from the period. Of all people, it is Bertrand Russell whose face is most brought to mind. The portrait also suggests the great bodily height that is inevitably mentioned in the contemporary descriptions. But in one respect, at least, the portrait falsifies what we know, for it shows the Russellian head atop a huge body, the stockiness of which suggests a longshoreman. However, according to his friend Lelong, Malebranche was so thin that his heartbeat seemed visible beneath his clothes. His clavicles were said to be wide—fortunately, since his breathing was thus made easier given his malformation of the chest—but it seems likely that if he sat at all, it was only for the head to which a body was later added.

In addition to his malformation, Malebranche suffered from an acidic stomach and was able to digest but little wine and no vinegar or onions.[6] On the other hand,

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[5] Ibid. xxxiv. The work had appeared two years earlier in a problematic Latin translation by Florentius Schuyl. We do not know for certain that this was not the text that Malebranche picked up; nor is there any help from the inventory of his library, which, curiously, contains no edition of it.

[6] Curiously, the ancient source of what might be called liliaceous idolatry. See pp. 447, 451 below.

Malebranche chewed tobacco, which was thought to contribute to his gauntness, and he was one of the first coffee drinkers in Paris, coming to depend on its comforting effect in dealing with an unpleasant task. This dependence caused him problems when during Lent he drank it only in the evening. In addition, from an early age he passed kidney stones and eventually had to be operated on for them. He also suffered from fevers, and he discovered, apparently to general surprise, that drinking large quantities of water was of help. He never shirked his ecclesiastical duty, although its ceremonies often required him to stand for long periods of time, thus causing him severe back pain. Despite all, he was said to be dexterous, exhibiting skill at billiards, for example, and also supple, since he was capable of placing his feet behind his head. Why he should ever have engaged in the latter, or how he discovered the capacity, is not recorded.

In 1673 Malebranche sold a house that he owned which left him an annual income, initially over three times what he paid for his room and board at the Oratory; although diminishing somewhat over time, this investment freed him from worries about money. Visitors remarked on how well furnished his quarters there were, but the inventory of his postmortem remains suggests a humble material existence. More impressive was his library of some 1,150 volumes, comprising 723 titles, which along with the rest of his belongings were left to the Oratory. The major investment of Malebranche's life, in any event, was one of a very different kind, one being made at the same time he sold his house.

Malebranche and Cartesianism

After his dramatic first encounter with the philosophy of Descartes, Malebranche turned to other works by the great man: the *Discourse on Method*, the *Meditations*, and the *Principles of Philosophy*. Not that he was entirely convinced by everything that he found there. While fully persuaded by what Descartes had to say about the physical world, Malebranche felt that certain correctives were necessary in metaphysics, especially with respect to the mind. He therefore read, or reread, St. Augustine. The upshot was a philosophical balance that Malebranche built into *The Search after Truth* and carefully preserved thereafter. The balance is in evidence right from the Preface of the *Search*, where the human mind is viewed as located in an intermediary position in the cosmological scheme of things. Infinitely above the mind stands its Creator, while below it is all of material creation. The mind's relation to God is such a close and essential relation, according to Malebranche, that without it, the mind would not exist. This union with God "raises the mind above all things. Through it, the mind receives its life, its light, and its entire felicity." The mind's relation to material creation through the human body, on the other hand, "debases man and is...the main cause of all his errors and miseries" (p. xxxiii).

For the distinction between mind and matter, Malebranche took over Descartes's dualistic ontology according to which the world exhaustively divides into thinking things and extended things. This is a division for which Malebranche along with many other Cartesians saw a source and thus an authority in the writings of Augustine. Despite withering criticism from the likes of Leibniz, for example, Malebranche steadfastly adhered to the Cartesian ontology in all of his scientific work and in his theorizing about the material world generally. When he turned to the mind and its relation to God, however, Malebranche argued that the Cartesian theory was in need of a correction that was derived from Augustine.

Malebranche's central criticism of Descartes, introduced in Book Three and made explicit in the tenth Elucidation, concerns the nature of ideas. No issue is more important in early modern philosophy. Its importance is reflected in the complexity of Malebranche's treatment of it and by its systematic significance for his philosophy. Suffice it to say here that on this question rest his views concerning the method of doubt, clarity and distinctness as criteria of truth, skepticism, the ontology of perception, the faith–reason distinction, among other important issues. The criticism itself, in any case, was that, whatever Descartes himself might have held, the immediate object of human perception is an idea in the mind of God. According to Malebranche, when I open my eyes, for example, and *look at* a tree by the roadside, what I actually *see* is something in the mind of God. The idea in the mind of God is the exemplar after which the tree was created, with the necessary result that the tree resembles that idea. By knowing the idea we are thus able to know the material thing. This theory of ideas, Malebranche's signature doctrine of the vision of all things in God, finds support in Augustine, at least in broad outline, and certainly comports with Augustine's insistence on man's dependence on God in all things, including even cognition.

The other doctrine that came to be most closely associated with the name of Malebranche is, at best, only implicit in Descartes. It is, of course, occasionalism. Here human dependence on God is even more in evidence. The thesis is that natural causes, be they collisions of material bodies or human volitions, are not real causes but only occasional causes. That is, they provide the occasion for the operation of the one and only real cause, which is God. When one body collides with another with the result that their motion is changed, it is God who has really changed the motion, and similarly for human volitions and changes in the body. Whatever problems this doctrine may pose for human freedom and moral responsibility—and Malebranche is not unaware of them—it is a doctrine that reflects Malebranche's classical outlook, for the system of occasional causes necessarily reflects the balance between God's aims in creation and His attributes, His omniscience and immutability no less than His omnipotence. It is a system that embraces both the natural domains of material collision and mind–body interaction, and the supernatural domain of the distribution of grace and perhaps even the occurrence of miracles. At this level of generality, in fact, the doctrine of occasionalism is just an account of divine Providence.

Because occasionalism lies so near the core of his thinking, the fundamental arguments for it lack the logical tidiness that one finds in Malebranche's arguments for the epistemic unreliability of the senses in Book One, for example, or even for the vision of all things in God in Book Three. The doctrine reflects a basic commitment more than it does a reasoned conclusion. It is treated explicitly in the fifteenth Elucidation and, to some extent, in the tenth, but its introduction in the *Search* itself belies its later prominence. Although the ascription of real powers to created things is described, in chapter three of the second part of Book Six, as "the most dangerous error...of the ancients," the topic arises only as an illustration of a methodological point, viz. that our assertions sometimes outstrip what we are able to conceive.

The subtitle of the *Search after Truth* is long and almost never included when the work is cited; yet it epitomizes its objective: *Wherein Are Treated the Nature of Man's Mind and the Use He Must Make of It to Avoid Error in the Sciences.* The pursuit of truth calls for the evasion of error not just in the prudential sense that the one should not be mistaken for the other, but because the avoidance of error is in a sense sufficient for the possession of truth. This very conservative epistemology, which today would be the polar opposite of Popper's bold method of conjecture and refutation, for example, is nonetheless firmly rooted in Malebranche's metaphysics of freedom, will, and method. The implications of this metaphysics give the *Search after Truth* its problematic, its structure, and its main argument.

It is judgment, according to Malebranche, that allows us to go beyond the passive perception of logical simples to something with sufficient logical complexity to assume a truth value. The perception of the diameter of a circle is for him the passive perception of a logical simple; that the diameter of a circle is the hypotenuse of an inscribed right triangle, by contrast, has sufficient complexity to assume a truth value. Malebranche follows Descartes in his account of the cognitive division of labor between the will and the understanding. He construes judgment as dependent on an active will, rather than on the understanding, which is the faculty of passive perception.

In order to guarantee the clarity and distinctness of a perception as an infallible criterion of its truth, Descartes had to eliminate the possibility of a demon deceiver who might mislead us about everything, including that criterion. By proving the existence of a veracious God, Descartes achieves this goal, but is then faced with just the opposite problem of showing how even infrequent error is possible, for anything less than universal truth seems incompatible with a veracious God. He solves this problem by attributing error to man, whose judgment permits the voluntary acceptance as true of what is not clearly and distinctly perceived to be true. Since the clarity and distinctness of perception forces us to accept it as true, the will in effect becomes a faculty of error when it gratuitously accepts as true what is not clearly and distinctly perceived. This negative role for the will of resisting except when overwhelmed by evidence is only implicit in Descartes. But Malebranche, at the very outset of the *Search*, erects it into his fundamental rule of method: accept as true only what one must.

Such a rule recalls the doubt of the Pyrrhonian skeptic, who advocates suspension of judgment whenever possible, the goal being not truth, or even the avoidance of error, so much as the well-being which was thought to result from the suspension of judgment and avoidance of error. A permanent state of doubt is avoided by Malebranche, however, because judgment-inducing evidence is not only achievable but inescapable. The cognitive means for knowing all that it is capable of knowing is always present to the mind and, if it fails to realize that capability, the fault lies with a willful inattention to the cognitive means. Our search after truth, therefore, is less a matter of seeking something out of sight, still less of constructing it, than of realizing fully what is already present to us. The actual method that Malebranche details in Book Six of the *Search*, along with the specific rules for implementing it, is therefore designed to *preserve* the evidence of our perceptions. Evidence is not something induced into our perceptions, but is a quality of what is perceived, and is therefore prior to our perceptions, there to be discovered.

Leading up to this method, Malebranche analyzes at length the principal circumstances that occasion the will's misuse of its freedom. There are three ways in which we perceive and each of them can lead the will to precipitate judgment. First, there is sensation, in which an object such as an apple operates on the sensory apparatus in a mechanical way, causing an impression in the brain which in turn occasions a sensory awareness. While the causal operation is purely mechanical at every stage, involving only the motion of matter, the awareness is purely qualitative—an awareness of redness or sweetness, for example. The most typical error connected with this operation is to attribute the awareness to the object causing the impression—to believe, for example, that the awareness of redness or sweetness, which in fact is nothing but a modification of the mind, is in the apple. That sensory awarenesses of this sort be perceived as if in objects is crucial to their biological function, which is to indicate, not the true nature of things, but their relevance to our survival. In order for us to see, and act accordingly, that an apple is beneficial and that a hot coal is potentially very dangerous, the sweetness and the heat must be perceived as if they were in the objects themselves.

The second way in which we perceive is the imagination, in which absent objects are perceived by means of images of them formed in the brain. As with sensation, imagination operates in a way that most contributes to the survival of the body, especially in social relations. Thus children, for example, are led by their imagination to imitate the behavior of those around them and later to adopt their opinions. The interests of a smoothly functioning society require uniformity of opinion and conduct even more than truth, which therefore suffers at its expense.

The third form of perception operates independently of the body in apprehending incorporeal things such as universals, God, and those ideas of things that succeed in representing them as they truly are, i.e. the ideas in the mind of God. Although this pure perception or understanding is a proper means of arriving at the truth—indeed, it is our only means apart from faith, which is appropriate in matters of religion—it too can be a cause of error. For example, the mind's capacity for knowing is finite and thus it cannot understand the infinite divisibility of matter, which might lead the mind to the mistake of denying it. In religion, the mind's inability to fathom the infinite can lead it to heresy, by denying the Incarnation or the Trinity, for example.

The errors of the senses, of the imagination, and of the pure understanding are the topics of the first three books of the *Search*. These errors, or occasions of error, relate to the general faculty of the understanding. In addition, there are errors that relate to the faculty of the will, for the inclinations and passions "dazzle our mind with false lights, cover it, and fill it with shadows" (p. 17). Malebranche's unfortunate mixture of metaphors is intended to indicate the noncognitive sources of error. The will has a natural and ineradicable impulse to seek certain ends that has been corrupted by Original Sin. The will's impulse has been diverted, or made capable of being diverted, from its true good into inclinations which precipitate false judgments in their favor. The passions are those inclinations that are occasioned by agitations in the state of the body and that are concerned with the good of the body. Malebranche's psychology of these inclinations and passions, the physiology of them, especially of the passions, his illustrations of the errors they occasion, especially of the philosophical and religious ones over the course of history, all make for fascinating reading and certainly reveal the prejudices and values of Malebranche's worldview. The inclinations and the passions are the topics, respectively, of the fourth and fifth Books, leading to the general method for preserving evidence, and the specific rules for doing so, in Book Six. Such is the problematic, structure, and main argument of the *Search after Truth*.

Malebranche and his critics

The *Search* was not even entirely in print when it came under attack by Simon Foucher, a cleric of Dijon moving in Parisian intellectual circles. Between the publication of the first three books of the *Search* in 1674 and the latter three the following year, Foucher launched his *Critique of the Search*, in which he attacked Malebranche on, among other things, method, even though Malebranche's discussion of method is to be found in Book Six, which therefore had not yet been published. Malebranche responded in a preface to the second volume of the *Search*. Another round in the debate was guaranteed by the strident tone of Malebranche's reply, which contains, among other gems, the oft-quoted line, "when one criticizes a book, it seems to me necessary at least to have read it."[7] Foucher answered with a *Reply on Behalf of the Critique* and an additional set of *Dissertations on the Search after Truth*, which had been the title of a work he had published prior to Malebranche's *Search*.

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[7] *OC* II 496.

Throughout these works, Foucher argues from the perspective of Academic skepticism, the significance of which for the seventeenth century is only now beginning to be appreciated. The aim is not the Pyrrhonian suspension of belief, but the restriction of certainty to the narrow range of mathematics and the characterization of all else as at best probable. From this perspective, Foucher criticized a long list of what he saw as groundless assertions and assumptions made by Malebranche. A recent commentator has systematized them in such a way that they amount to nothing less than the downfall of Cartesianism.[8] Very briefly, the thesis is that because of their dualism, according to which the essence of mind as thought differs from the essence of matter as extension, the Cartesians cannot satisfy two essential-likeness principles. One is that a cause must be essentially like its effect, and the other is that knower and known must be essentially alike. Since mind is essentially different from body, mind can neither know nor act on body. The logical neatness of this exchange was historically complicated by the intrusion of the Benedictine Robert Desgabets on behalf of Malebranche. But such was Desgabets's Cartesianism, and such his understanding of Malebranche, that the Oratorian dismissed his *Critique* of Foucher's *Critique* with the comment, "it seems to me that those who involve themselves in attacking or defending others should read their works with some care in order fully to understand their views."[9]

This was only the beginning of Malebranche's career in polemic, the results of which were often reflected by changes introduced to the successive editions of the *Search*. To understand fully the philosophy of Malebranche, and his *Search* in particular, it is often more than useful to be aware of these debates. Even when the results did not result in major alterations in the *Search*, the debates draw attention to, probe, and elucidate many of its most difficult and philosophically most significant points.

The second debate to emerge from the *Search* took place in 1678, with Anselme, a Parisian cleric of whom nothing is known. The position Anselme defends is a commonsense realism with respect to the status of light and colors, contrary to the Cartesian position that only shape and motion characterize material things and that the colors we experience are but modifications of our own minds. He attacked the Cartesian basis for Malebranche's view in a *Discourse*, to which Malebranche replied, condescendingly and unhelpfully, in a *Letter*, occasioning *Observations* from Anselme. Against Descartes, Anselme argued that God would be no less a deceiver if we were deceived about colors than about bodies, that ideas of tickling do resemble something in the world even if not the feather occasioning them, and that the Cartesians themselves belie their rejection of real colors with the sorts of experiments they perform with the camera obscura, for example. Against Malebranche he offers a *pari passu* argument with respect to shape and color (if color is only a mode of the mind, then so is shape); he criticizes the perception of pain as a model for the perception of light and color; and he undoes the conceptual argument against the reality of color on the basis that since the Cartesians admit that modes are not included in the concept of a substance, the failure to notice color in the concept of matter shows nothing. The core of Book One of the *Search* is very much under attack.[10]

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[8] Watson, *Downfall of Cartesianism.*

[9] *OC* II 500.

Anselme relates that he was encouraged to criticize Malebranche by the preface to the second volume of the *Search*, in which Malebranche had responded to Foucher. At the end of that preface, Malebranche said that while his peace of mind would not permit responses to all his critics, he would try to satisfy all those motivated by love for truth. With the dispute with Foucher at an end, he suppressed this preface in the edition of 1678 and thereafter. Although the invitation to critics was thereby suppressed, it nonetheless continued to be accepted.

Potentially the most explosive of Malebranche's debates was with the Jesuit Le Valois who, in 1680 under the pseudonym of Louis de La Ville, attacked the Cartesian explanation of the Eucharist. The background to this technical theological dispute was the struggle over hegemony in the schools between the Jesuits, who championed Aristotle, and the Cartesians, who would have replaced him with Descartes. Part of the Cartesian program was to show that Descartes could better explain all that Aristotle had been called upon to do, including such theological questions as transubstantiation. Since Descartes had abandoned the Aristotelian doctrine of matter and form that at least since the Council of Trent had been the basis for understanding this dogma, some new explanation was required. Descartes himself carefully eschewed theological controversy, but his followers were less cautious, including Malebranche, who in the *Search* boasted that if there were any point in doing so, he could give a clear and distinct account of how his view of matter agrees with transubstantiation (p. 246). As might be expected, the context for this remark was very complex, involving a bewildering amount of intrigue. For example, La Ville's argument was that the Cartesian account was inconsistent with transubstantiation and therefore false; his attack was published by Pierre Bayle, who clearly agreed with La Ville's premise, but concluded from it that the dogma of transubstantiation was false. Bayle at the same time also published, among other related documents, a reply to La Ville which was taken to be from Malebranche. (Perhaps because of his friendship with Malebranche, Bayle did not disclose the authorship.) This was the sort of issue that got one on the Church's Index of forbidden books, although Malebranche landed there for other reasons, because the engineer of his condemnation was Arnauld, who on this issue, for once, was in agreement with the Oratorian.

Probably the most important of Malebranche's disputes, certainly the longest and most bitter, was with Antoine Arnauld, the scourge not only of Malebranche, but of Leibniz, Bayle, Descartes himself, and others in the seventeenth century. In the period, Arnauld was most recognized as a proponent of Jansenism, a highly contentious doctrine concerning the grounds for Christian salvation. Malebranche addressed this topic in his *Treatise on Nature and Grace*, the second edition of which notes that for a proper understanding of it, the *Search*, and particularly its doctrine on the nature of ideas, must first be understood. The doctrine that Arnauld found in the *Search* was the vision of all things in God, which he criticized from a more orthodox Cartesian point of view in a work called *On True and False Ideas* (1683). Malebranche answered in the same year with his *Reply*, and Arnauld only months later with his *Defense against the Reply*, each of them book-length works. Although new and important points continued to be made on both sides, the dispute was rapidly degenerating to the level of personal recrimination and intrigue. The scholarly world grew bored and disgusted with the dispute, but it went on, even beyond the death of Arnauld in 1694, as Malebranche continued to attack his views. Meanwhile, Arnauld and then his supporters succeeded in getting various works of Malebranche, including the *Search*, placed on the Index. When asked on his deathbed by his confessor whether, as the Jansenists claimed, he had written too strongly against Arnauld, Malebranche reflected a bit and then, raising his eyes to heaven, answered no, that the attack on Arnauld was useful in elucidating many truths.

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[10] For more on this ignored polemic, see *OC* XVII-1 637–73.

Despite the nonsense surrounding it, the exchange between the two Cartesians was a *tour de force* in seventeenth-century theory of ideas. Arnauld correctly interpreted the vision of all things in God to involve two essential claims: (1) we directly perceive, not material things, but ideas that represent them by taking their place in the mind; and (2) these ideas are different from, and independent of, our perceptions. According to Arnauld, who defended a view much closer to Descartes's own, ideas are not different from perceptions that are modifications of the mind, and they represent material things by presenting them to the mind, which thus directly perceives material things by means of ideas. The philosophical substance of this exchange has in recent years generated a fair amount of sophisticated commentary, which is not yet in agreement on the exact nature of the views being contested, but all of it indicates that Malebranche and Arnauld explored the dialectic of representationalist theories of perception to an extent that no one had previously. Very much in evidence in their debate were issues that have dominated perception theory to the present: direct perception, representation, the veil of perception, presence to the mind, and so on.

Arnauld's position was later assumed by Pierre-Sylvain Régis as part of still another dispute rooted in the *Search*. Régis was, in the later half of the century, the most outspoken propagandist on behalf of the Cartesian cause, having been designated as its missionary to the south of France and later giving public lectures in Paris. In 1690 he published the Cartesian textbook, *System of Philosophy*, which attacked Malebranche at many points. Malebranche responded in 1693, addressing three issues in particular. One was the explanation of the apparent larger size of the horizontal sun over the meridional sun. As against Malebranche's psychological explanation, Régis had made the mistake of attributing the difference to differing refraction caused by the atmosphere. The *Journal des savants* eventually went so far as to print attestations of his error. Another issue was the significance of pleasures of the senses; Régis, like Arnauld, attacked Malebranche's view that pleasure *qua* pleasure is capable of making us happy. Also like Arnauld, Régis opposed Malebranche on the nature of ideas.

An important upshot of this exchange concerned the last point, for from it emerged the clear statement of Malebranche's doctrine on the efficacy of ideas. Régis had been prepared to concede that God creates and preserves the soul, and causes all its ideas and sensations, but he insisted that this dependence is the only union that the soul has with God. In reply, Malebranche underlined the soul's dependence on God, not only as the efficient cause of its perceptions, but also on God's ideas as the formal cause of those perceptions. Because a perception is of a certain kind in virtue of its formal cause, it can represent to the mind the kind of object that it does. The idea of a triangle in the mind of God in this sense causes a perception to be the kind of perception that represents a triangle in the world. Without such a formal cause, the perception would be a mere modification of the mind and thus would represent, according to Malebranche, nothing but the mind itself. Having been led to make this notion of cause explicit, Malebranche in the final edition of the *Search* was led to append to one of its most important sentences an explication that without that notion is unintelligible. "By the word *idea*, I mean here nothing other than the immediate object, or the object closest to the mind, when it perceives something, i.e., that which affects and modifies the mind with the perception it has of an object" (p. 217). Only as the formal cause of its perception can an idea be understood to affect and modify the mind.

What should have been the most productive of Malebranche's disputes—for it involved the other great *fin-de-siècle* rationalist—unfortunately proved fragmentary, sporadic, and largely inconclusive. The fault was not Leibniz's. Before leaving Paris after a four-year stay which began as a diplomatic mission, Leibniz visited Malebranche in the Oratory, in early 1675, probably having met him previously in some more public setting. The visit was occasioned by the publication of a mathematical work by Jean Prestet, a disciple of Malebranche. Not much is known about the meeting, but it did lead directly to a brief correspondence in which the Cartesian doctrine of the real identity of space and matter was in dispute. Leibniz later broadened his attack to include virtually the whole of Cartesianism and so, despite Leibniz's nominal approval of his vision of all things in God, Malebranche also came under an attack that included his views that thought is the essence of the mind and that natural causes are but occasional causes. Malebranche here preferred to ignore his opponent or to let others defend his views—Arnauld defended occasionalism against Leibniz's doctrine of the preestablished harmony, for example. In one area he was forced by Leibniz's arguments to respond and that was the debate over conservation laws in physics. Malebranche was led by Leibniz first to abandon Descartes's account of the cohesion of matter and then systematically to revise his laws of collision, but he never relinquished extension as the essence of matter, which is the doctrine that Leibniz saw as the mistaken basis of Malebranche's original views. Something of a rapprochement was reached in one area, at least: theodicy. Leibniz's celebrated doctrine of this world as the best of all possible worlds may have been derived from Malebranche's concept of God as the divine strategist who weighs ends and means.[11] That Malebranche did not engage Leibniz more closely is to be regretted, for the great German rationalist was a close and not entirely unsympathetic reader of the *Search after Truth.*

Another debate that emerged from the *Search* concerned Malebranche's doctrine of occasionalism. In an anonymous work of 1686, Fontenelle argued that the impenetrability of bodies provided the ground for a necessary connection between their collision and subsequent states, and that to this extent they are not just occasional but real causes. Although he responded with a brief anonymous work of his own, here Malebranche was again content to play a less active role since his cause was taken up by no less than Pierre Bayle. This Huguenot refugee in Holland, who became the so-called Arsenal of the Enlightenment, was a friend who, for example, corrected page proofs of Malebranche's work published in Holland. In occasionalism Bayle likely saw a block against doctrines of mechanism, both metaphysical and physical, that would have threatened Providence as he conceived of it. The opposition was joined meanwhile, by the Benedictine François Lamy and another Huguenot refugee, Pierre de Villemandi. Although it is debatable whether Malebranche or Bayle ever appreciated the full force of Fontenelle's objection, there is, as Hume saw, an answer to it.[12]

The last polemic to emerge from the *Search* was a rather sad affair. Dortous de Mairan, who was a former student of Malebranche's, raised a charge against him that had been raised explicitly three decades earlier by Noel Aubert de Versé and at least implicitly by Arnauld. The charge was a serious one, that there was no difference between Malebranche's views and those of the pantheist Spinoza. Malebranche was not in a position to mount a vigorous defense, for he was old and failing. "I'm having difficulty regaining my health, he wrote to his former student; I have been bled again. I'm seventy-six years old." He says, and his handwriting demonstrates, that his hand trembles, restricting him to produce but a line with the effort that previously yielded a page.[13]

Even with the tenacity and rigor that he exhibited in the polemic with Arnauld, however, it is not clear how Malebranche might have dealt with Dortous. He argues that the main source of Spinoza's errors, and presumably the point on which they differ, is the connection between ideas and things. According to Malebranche, Spinoza supposes that things are perceived in themselves and this endows them with the eternality, necessity, and infinity of ideas properly understood. Dortous replied that the problem belonged, rather, to Malebranche, whom he regarded as incapable of distinguishing created extension from the uncreated idea of it. As Arnauld had seen the divine ideas as being collapsed into matter, so Dortous saw the reverse.[14] In either case, the transcendence of God is threatened. Another symptom of Malebranche's slide toward Spinozism in this exchange is his inability to defend an ontology of individual and independent material substances. The status of material things seemed more like that of modes than of substances, indeed, of one single substance, perhaps of the only substance. This was not a happy drift at all for the aged philosopher at the end of his life.

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[11] Catherine Wilson, "Leibnizian Optimism," *Journal of Philosophy*, 80 (1983), 765–83.

[12] For more on this debate, see *OC* XVII-1 565–94.

[13] 12 June 1714, *OC* XIX 882–9.

Malebranche's influence

Despite his widely acknowledged genius and prolific writing, the name of Malebranche was not associated with any movement in philosophy; nor was he founder of any eponymous school, certainly not of the Cartesian sort of which he himself was a member. He was not attended by any great number of notable disciples. But this is not to say that he was without influence or support. On the contrary, before falling into the neglect from which he has just recently been recovered, Malebranche enjoyed an audience that was diverse, numerous, and widespread. His actual influence was, however, often surprising and sometimes contrary to some of his most profound intentions.

He had a certain following among the nobility—the Marquis d'Allemans most notably—and his work, like that of Descartes, managed to penetrate the salons—Mme de Grignan, for example, was an admirer, and Mlle de Vailly hosted conferences at which the philosophy of Malebranche was discussed (among this group was Miron, who later defended Malebranche against the Jesuit Dutertre on the sensitive issue of freedom of the will).

Within the Oratory itself, which since the time of its founder Bérulle had been more than sympathetic with Cartesianism, Malebranche had an entourage whose acceptance of his views came in the end to characterize the Oratory generally. The situation was complicated politically by a period of royal opposition to Jansenist elements in the Oratory, of which Malebranche was temporarily the victim. Only when his own anti-Jansenist credentials were established by his polemic with Arnauld over the issue of Providence did Malebranche begin to achieve a measure of security. But then he was the object of attack from the other side, resulting eventually in the inclusion of his works on the Index. Malebranche's closest friend and philosophically most important supporter in the Oratory was Bernard Lamy, who unfortunately was less successful in avoiding the repercussions of opposing authority—he was exiled twice for his views.

The most outspoken of Malebranche's defenders was the one-time Oratorian Henri Lelevel, about whom not a great deal of relevance is known other than that he was thoroughly imbued with the philosophy of Malebranche, teaching it in lessons given in Paris and applying its principles even in literary theory. He undertook a defense of Malebranche against Régis in a two-volume work published in 1694, *True and False Metaphysics*. The first volume dates from before Malebranche's own reply to Régis so that Malebranche initially had hopes that it would spare him his own reply. The second volume appeared in the midst of the polemical literature and is very much a product of that milieu. Lelevel criticized Régis, on several topics, perhaps most notably for his adherence to Descartes's doctrine of the created eternal truths, which according to Lelevel leads to skepticism. Essentially elaborating Malebranche's argument from the tenth Elucidation, Lelevel tried to show that if everything depends on the divine will, including what we take to be eternal truths, then since the divine will is not known to us, we can know nothing.

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[14] See Radner, *Malebranche*, p. 113.

Another sphere of Malebranchian influence embraced the leading scientific institution in France. Malebranche's intellectual career may be divided into three fairly datable stages. During his period of religious training his attention was fixed on biblical, historical, and linguistic matters. With the discovery of Descartes's *Treatise on Man* his attention shifted to philosophy and remained there until the last decade of the century when, his works under scrutiny by the compilers of the Index, it focused on politically neutral topics in science.[15] No stage was entirely free, obviously, from the concerns of the others, but in the last part of his life, Malebranche's concern with science was very prominent. Now in evidence were his interests in microscopy, mechanics, biology, anatomy, medicine, etc.—interests reflected in the scientific material incorporated into the successive editions of the *Search*. (The inventory of his library revealed that nearly half its titles were of scientific works.)

Appropriately enough, Malebranche was elected to the Royal Academy of Sciences upon its reformation in 1699 by Fontenelle, who despite the earlier debate over occasionalism, clearly was a supporter of his. Malebranche tried, with no little success, to rise to the new mathematics of his time, and he was a partisan of the infinitesimal calculus against more orthodox Cartesians such as Régis. The register of the Academy shows him to have attended regularly, and he was involved in the administration of it. Within the Academy, there was a circle around Malebranche that included such names as L'Hôpital, Carré, Rémond de Montmort, and Reyneau. The identity of this group as Malebranchian was recognized not only by its members but also, repeatedly, by Fontenelle, the permanent secretary of the Academy.

Malebranche's importance to British philosophy into the eighteenth century has been massively and conclusively documented. His admirers "ranged from a deposed English king who made France his home to defrocked French priests who made England theirs, from London booksellers to Oxford dons, from ladies who wrote essays on divinity to soldiers who had a penchant for metaphysics."[16]

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[15] See A. Robinet, *OC* XX 147ff.

[16] McCracken, *Malebranche and British Philosophy*, p. 156.

Beyond these amateurs, Thomas Taylor not only translated the *Search* as well as the *Treatise on Nature and Grace*, but also consciously applied Malebranche's principles to theological questions surrounding Providence, free will, grace, and the problem of evil. The most prominent of Malebranche's advocates in Britain, however, was John Norris, a onetime friend of Locke who came to criticize him from a Malebranchian perspective. Locke's view was that Malebranche's theory was not likely to gain adherents, but he engaged Norris in a bitter dispute, producing *An Examination of Malebranche's Opinion of Seeing All Things in God*, a very important document for understanding, among other things, Locke's theory of perception. Norris himself, meanwhile, was independently espousing Malebranche's philosophy in works such as *An Essay towards the Theory of the Ideal* (1701) to the point that the Aristotelian John Sergeant dubbed him "the English Malebranche."

That Berkeley was a Malebranchian was claimed immediately upon publication of his *Principles* in 1710, was repeated frequently thereafter, but was denied by him in no uncertain terms. The claim was more than plausible, for Malebranche was a source for Berkeley's views on the variability of perceived primary qualities, the indemonstrability of matter, human dependence on God, among others. Berkeley's notebooks refer to Malebranche more frequently than to any other author save Locke and show him to have been an early and close reader of the *Search*. The challenge to Berkeley was to separate himself from the Oratorian, which he attempted to do, finally, in the second of the *Three Dialogues* by actually listing his putative differences from the "enthusiasm of Malebranche," who is said to assert, while Berkeley himself denies, abstract ideas, "an absolute external world," the deceptiveness of the senses, and our ignorance of "the true forms and figures of external things."[17]

Hume's debt to Malebranche is, if anything, greater than that of his illustrious predecessor in British empiricism. Rarely do authors cite other authors in this period, but the name of Malebranche appears four times in the *Enquiries*, and only seven other names are cited in the *Treatise*. Perhaps more indicatively, Hume himself wrote to a friend three years before publication of the *Treatise* that if he wished to understand the metaphysical parts of that work, he should first read four other works, the first of which being the *Search*. Malebranche not only anticipated Hume's concerns over necessary connections between natural causes and effects, but supplied him with the arguments that he used to show that mental causation provides no counterexample to the claim that necessary connections are never perceived. The slogan that Hume's theory of causation is occasionalism minus God is not a bad approximation. In addition, Malebranche was a source for Hume's thoughts on judgment, belief, imagination, knowledge of the self, human physiology, and other topics.

With respect to the Continental Enlightenment, meanwhile, Malebranche had an influence that he would have found no less repellent than the use made of his work by Hume. His conceptions of God and nature, for example, were construed as deistic conceptions of blind, impersonal forces. His mechanism of natural judgment endowed sensation with epistemic value and anticipated the sensationalism of Condillac. And his theory of the will found a no less unlikely audience. Responding to the requirements of reason, faith, and introspection, Malebranche distinguished—as Descartes did not—between the will, a general impulse toward goodness and truth for which God was responsible, and freedom, a power to arrest this impulse on some particular object. Malebranche thought that man was responsible for his use of freedom, but without thereby acting as a real cause since rest has no force. But the determination itself he saw as resulting from a variety of factors (heredity, temperament, education, etc.) which made the notion acceptable to Helvétius, Holbach, and especially Voltaire.[18]

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[17] *The Works of George Berkeley*, ed. A. A. Luce and T. E. Jessop (London, Thomas Nelson, 1949), vol. 2, pp. 211–13.

The influence of Malebranche and the notice taken of his work were, during his first century at least, commensurate with the intrinsic interest of his philosophy. Such are the vagaries of philosophical fate, however, that his star then went into decline, not to say eclipse, until the recent restoration to its original place in the firmament. The latter half of the twentieth century has returned to the view of Malebranche as philosopher of the first rank, and has recognized his *Search after Truth* as a philosophical classic. Moreover, we have realized that not the least sense in which Malebranche can be seen as the philosopher of French classicism is his very use of the language, which comes across, or should come across, even in English translation. In addition to his importance in the history of philosophy and the intrinsic value of his thought, Malebranche is a delight to read.

TML

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[18] For more on Malebranche's Continental importance, including his relation to Kant, see Alquié, *Le cartésianisme de Malebranche*.

Chronology

1637	Publication of Descartes's *Discourse on the Method*
1638	Birth of Nicolas Malebranche, in Paris, 5 August; birth of Louis XIV
1644	Publication of Descartes's *Principles of Philosophy*
1648	Treaty of Westphalia, end of the Thirty Years War
1650	Death of Descartes, aged 53
1660	Malebranche enters the Oratory
1664	Malebranche is ordained a priest and also discovers Descartes
1674	Publication of Books One–Three of *The Search after Truth*, with Books Four–Six the following year
1677	Death of Spinoza, aged 44, and publication of his posthumous works, including the *Ethics*
1678	Publication of the third edition of the *Search*, with the *Elucidations*
1680	Publication of *Treatise on Nature and Grace* (second edition, 1681)
1683	Publication of Arnauld's *On True and False Ideas*
1684	Publication of *Treatise on Ethics*
1685	Revocation of the Edict of Nantes; birth of Berkeley
1688	Publication of *Dialogues on Metaphysics and on Religion* (and *Dialogues on Death* with the third edition, 1696)
1689	Publication of Locke's *Epistola de tolerantia, Two Treatises on Government*, and *Essay Concerning Human Understanding*
1690	Publication of Régis's *System of Philosophy*
1694	Death of Arnauld, aged 84
1696	Publication of Bayle's *Dictionnaire historique et critique*
1699	Election to the Académie des Sciences
1704	Death of Locke, aged 72
1708	Publication of *Dialogue Between a Christian Philosopher and a Chinese Philosopher*
1709	*Search* placed on the Index of Forbidden Books
1710	Publication of Berkeley's *Treatise Concerning the Principles of Human Understanding*, followed by the *Three Dialogues* in 1713

1712	Publication of the “sixth” edition of the *Search*, actually the seventh, the last in Malebranche’s lifetime
1715	Death of Malebranche, 13 October, aged 77; death of Louis XIV
1716	Death of Leibniz, aged 70

Further reading

The standard original language edition of Malebranche's work is the *Œuvres complètes de Malebranche* (Paris, J. Vrin, 1958–84) under the general editorship of André Robinet, in twenty volumes with two unnumbered volumes of indices (referred to as *OC*). The edition is a model of its kind. The individual works were edited by various Malebranche scholars including Robinet himself, and contain very thorough annotation, histories of the works, the *varia* of the different editions, historical documentation including contemporary reviews, and other useful material. The edition is indeed complete, containing Malebranche's correspondence, his polemical works as well as excerpts from his opponents', and previously unpublished texts. The subsequent Pleiade publication of Malebranche's *Œuvres* (Paris, Gallimard, 1979–92) in two volumes edited by Geneviève Rodis-Lewis with the collaboration of Germain Malbreil, contains an updated set of annotations and is both practical and scholarly.

Whatever may be its shortcomings (see *OC* XIX 210) the standardly employed biography of Malebranche is by the Jesuit Y. M. André (1675–1764), who knew Malebranche and many of those who figured in his life. This *La Vie du R. P. Malebranche* was published only in 1886 (Geneva, Slatkin Reprints, 1970). While André's work is useful, a modern biography would be most welcome.

The *Bibliographia Malebranchiana* by Patricia Easton, Thomas M. Lennon and Gregor Sebba (Carbondale, Southern Illinois University Press, 1992) is, as the subtitle indicates, a critical guide to the Malebranche literature into 1989. One will find there, not only all that Malebranche wrote, including such translations as there are, but also all that has ever been written about him, primarily in French and English, but in other languages as well.

The best general account of Malebranche's philosophy is by Daisie Radner, *Malebranche: A Study of a Cartesian System* (Assem and Amsterdam, Van Gorcum, 1978). A very fine, but briefer account is to be found in Charles J. McCracken's *Malebranche and British Philosophy* (Oxford, Clarendon Press, 1983), which not incidentally is the definitive treatment of the topic indicated in its title. Also as a general account, Ralph W. Church's *Study in the Philosophy of*

Malebranche (London, George Allen & Unwin, 1931) is still a useful book.

With respect to more particular topics, Steven Nadler has contributed two books that are essential in dealing with Malebranche's theory of ideas: *Arnauld and the Cartesian Philosophy of Ideas* (Manchester, Manchester University Press, 1989) and *Malebranche and Ideas* (Oxford, Oxford University Press, 1992). Surprisingly, Malebranche's views on consciousness had hardly been examined at all until Tad Schmalz's *Malebranche's Theory of the Soul: A Cartesian Interpretation* (New York, Oxford University Press, 1996). Richard A. Watson's *The Downfall of Cartesianism 1673–1712* (The Hague, Martinus Nijhoff, 1966) contains a classic account of Malebranche's confrontation with Foucher. Desmond Connell's *The Vision in God: Malebranche's Scholastic Sources* (Louvain and Paris, Nauwelaerts, 1967) opens up previously unexplored terrain. A surprising alliance between Descartes and Leibniz against Malebranche is argued by Nicholas Jolley in *The Light of the Soul: Theories of Ideas in Leibniz, Malebranche and Descartes* (Oxford, Clarendon Press, 1990).

There are two collections of essays that will be found of use to those working on a variety of topics in Malebranche. *Nicolas Malebranche* (New York, Garland Publishing, 1992) ed. Vere Chappel, is a selection from amongst the most important of previously published articles on Malebranche, and *Nicolas Malebranche: His Philosophical Critics and Successors*, ed. Stuart Brown (Assen and Maastricht, Van Gorcum, 1991) contains new papers dealing with Malebranche's relations to Arnauld, Leibniz, *et al.*

For those who read French, there is, of course, a substantial amount of excellent literature. Pride of place perhaps goes to André Robinet, *Système et existence dans l'oeuvre de Malebranche* (Paris, J. Vrin, 1965). An excellent introduction is provided by Geneviève Rodis-Lewis, *Nicolas Malebranche* (Paris, Presses Universitaires de France, 1963). Its wide usefulness is not indicated by the title of Ginette Dreyfus's *La volonté selon Malebranche* (Paris, J. Vrin, 1958). *Le cartésianisme de Malebranche* (Paris, J. Vrin, 1974) by Ferdinand Alquié, examines both Malebranche's major source and, to a lesser extent, his Continental influence. The following are classic works worth consulting: Martial Gueroult, *Malebranche* (3 vols., Paris, Aubier, 1955–9); Henri Gouhier, *La philosophie de Malebranche et son expérience religieuse*, 2nd edn. (Paris, J. Vrin,. 1948) and *La vocation de Malebranche* (Paris, J. Vrin, 1926).

Translators' preface

The Search after Truth is Malebranche's first, longest, and most important work. From the first edition of 1674–75 to the final one of 1712, each of its editions underwent modifications, often significant and of considerable scope, that reflected Malebranche's developing thought. The work is therefore an account of his initial interests, mature thought, and abiding philosophical concerns.

The Search after Truth has been translated into at least nine languages (including, in this century, Russian, Japanese, and Turkish) but not into English for over two hundred and fifty years. Thomas Taylor produced an English translation in 1694, with a second edition appearing in 1700; a possible third edition of 1720 is no longer extant. Another translation was published in 1694–5, the work presumably of Richard Sault, who signed the dedication. Neither of these translations is now of much use. Both are archaic: Taylor hopelessly so, Sault to a lesser degree but occasionally to the point of being genuinely misleading. Both contain numerous mistakes, some major, and in Sault's case there are also many of the annoying minor variety. Both have biases that sometimes lead them to corrupt the text, for example, the suppression of a reference to *l'Eglise* (*OC* I 393) by Taylor in favor of the "Gospel" (p. 106), and by Sault in favor of "mysteries of Religion" (Book Three, p. 12). Finally, neither had the benefit of the last edition, but only of the fourth (first published in 1678), which lacks, for example, the *varia* resulting from the controversies with Arnauld.

It is a particularly propitous time to satisfy the demand for a modern English translation that growing interest in Malebranche has created. Malebranche complained of Taylor's translation of the *Eclaircissement sur la lumière* (Elucidation 16) that translators should inquire of authors as to the most exact editions of their work. We have the nearest thing to Malebranche's own endorsement of an edition and the text itself in the remarkable production of his *Œuvres complètes* by the French Centre National de la Recherche Scientifique under the general editorship of André Robinet. This is the first edition of Malebranche's complete works; the care with which it was produced is indeed remarkable. In particular, Geneviève Rodis-Lewis's edition of *De la recherche de la vérité* at last makes the attempt to translate it worthwhile. The text here translated is that of the sixth and last edition exactly as she has established it (*OC* I–II, 1962) and does not include the addenda *Lois générales de la communication des mouvements* and *Réponse à Monsieur Regis* (reprinted in *OC* XVII–1). Our thanks are due to the Librairie Philosophique J. Vrin, Paris, for its permission to use its edition of this text, including completed references and illustrations.

Some of the typographical and stylistic conventions of the original and the Vrin editions have not been retained (quotations, for example, are set off by quotation marks rather than the italics used in those editions); and present-day practice in the capitalization of words and special terms has been observed. We have likewise attempted to regularize the many inconsistencies in Malebranche's forms of source citation and to conform them to present-day practice. Material enclosed in square brackets is either references completed by Mme Rodis-Lewis or expressions from the original French we felt obliged to include for reader clarification. Angle brackets denote all other insertions by the translators.

We wish to thank Professor John Moran, who carefully read and checked the entire translation of the *Search*, making many valuable suggestions for improvement. Naturally, he is responsible for none of its defects.

Each of us has labored over the entire work, but T. M. L. is particularly responsible for the odd-numbered books and the first half of the sixth, P. J. O. for the even-numbered ones and the second half of the sixth.

TML
September 1975 PJO

When the 1959 bibliography of everything written by or about Malebranche was updated to 1989, the number of entries nearly doubled (see Further reading). This increase reflects, of course, the explosion of interest in Malebranche over those three decades. This shows no sign of abating and seems, rather, to be accelerating. Malebranche has progressed from a footnote, to the subject of articles and, now, of whole books. He has again become what he was in his own lifetime, a philosopher of the first rank.

This renaissance *malebranchiste* undoubtedly traces its source to the publication of *OC*, and has, no less undoubtedly, been sustained by English translations of Malebranche's works. The annus mirabilis of 1980 saw the coincidental publications of Malebranche's *Dialogues on Metaphysics and on Religion*, *Dialogue Between a Christian Philosopher and a Chinese Philosopher*, and, of course, *The Search after Truth*. More recently, his *Treatise on Nature and grace* and *Treatise on Ethics* have appeared. A new translation of the *Dialogues on Metaphysics and on Religion* is appearing simultaneously in this series.

The present edition of *The Search after Truth* and the *Elucidations* thereof is essentially that of the 1980 publication (Columbus, Ohio State University Press). Some three dozen alterations have been made, ranging from typographical corrections to inclusion of a few omitted phrases and some plainly better renderings. Thanks for supplying some of them are due to D. Garber, D. Radner and R. Watson. Malebranche's citations of Latin texts, previously left standing, have been rendered into English. The Introduction, Chronology, and Further reading have been produced especially for this edition. Patricia Easton read the Introduction and made many useful suggestions for improvement.

TML
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THE SEARCH AFTER TRUTH

Wherein Are Treated the Nature of Man's Mind and the Use He Must Make of It to Avoid Error in the Sciences

Preface

The mind of man is by its nature situated, as it were, between its Creator and corporeal creatures, for, according to Saint Augustine,[a] there is nothing but God above it and nothing but bodies below it. But as the mind's position above all material things does not prevent it from being joined to them, and even depending in a way on a part of matter, so the infinite distance between the sovereign Being and the mind of man does not prevent it from being immediately joined to it in a very intimate way. The latter union raises the mind above all things. Through it, the mind receives its life, its light, and its entire felicity, and at many points in his works Saint Augustine speaks of this union as the one most natural and essential to the mind. The mind's union with the body, on the contrary, infinitely debases man and is today the main cause of all his errors and miseries.

I am not surprised that ordinary men or pagan philosophers consider only the soul's relation and union with the body, without recognizing the relation and union it has with God; but I am surprised that Christian philosophers, who ought to prefer the mind of God to the mind of man, Moses to Aristotle, and Saint Augustine to some worthless commentator on a pagan philosopher, should regard the soul more as the *form* of the body than as being made in the image and for the image of God, i.e., according to Saint Augustine,[b] for the Truth to which alone it is immediately joined. It is true that the soul is joined to the body and is naturally its *form*; but it is also true that it is united to God in a much closer and more essential way. The relation it has to its body may cease; but the relation it has to God is so essential that God could not conceivably create a mind without it.

[a] "Nihil est potentius illa creatura, quae mens dicitur rationalis, nihil est sublimius."

"Quidquid supra illam est, jam creator est." *Tract.* 23 on St. John.

"Quod rationali anima melius est, omnibus consentientibus Deus est." Aug. [*De immortalitate animae,* ch. 13.]

[b] "Ad ipsam similitudinem non omnia facta sunt, sed sola substantia rationalis; quare omnia per ipsam, sed ad ipsam non nisi anima rationalis. Itaque substantia rationalis & per ipsam facta est, & ad ipsam; non enim est ulla natura interposita." *Lib. imp. de Gen. ad litt.* [Ch. 60.]

"Rectissime dicitur factus ad imaginem & similitudinem Dei, non enim aliter incommutabilem veritatem posset mente conspicere." *De vera rel.* [Ch. 44.]

It is evident that God can act only for Himself, that He can create minds only to know and love Him, and that He can endow them with no knowledge or love that is not for Him or that does not tend toward Him; but He need not have joined to bodies the minds now joined to them. Hence, the relation that minds have to God is natural, necessary, and absolutely indispensable; but our mind's relation to our body, although natural to our mind, is neither absolutely necessary nor indispensable.

This is not the place to adduce all the arguments and appeals to authority that might lead one to believe that it is more of the nature of the mind to be joined to God than to be joined to the body; these matters would lead us too far afield. To present this truth properly, it would be necessary to overthrow the fundamental principles of pagan philosophy, to explicate the disorders of sin, to combat what is falsely called experience, and to argue against the prejudices and illusions of the senses. Hence it is too difficult an undertaking in a preface to make this truth perfectly comprehensible to ordinary men.

But it is not so difficult to prove this to attentive minds who have been instructed in the true Philosophy. For it suffices to have them recall that as the will of God orders the nature of each thing, it is more of the nature of the soul to be joined to God through its knowledge of the truth and its love of good than to be joined to the body, since it is certain, as we have just said, that God made minds to know and love Him rather than for *informing* bodies. This proof is capable of initially arousing minds that are somewhat enlightened, making them attentive and then convincing them; but it is morally impossible that minds of flesh and blood, which are capable of knowing only what can be sensed, should ever be convinced by such reasoning. For these sorts of people, gross sensible proofs are required, because to them nothing appears solid unless it makes some impression on their senses.

The first man's sin has so weakened our mind's union with God[a] that it can be felt only by those whose heart is purified and whose mind is enlightened, for this union appears imaginary to all those who blindly follow the judgments of the senses and the impulses of the passions.

On the contrary, Original Sin has so strengthened our soul's union with our body that it seems to us that these two parts of us are but one and the same substance; or, rather, it has subjected us to our senses and passions in such a way that we are led to believe that our body is the more important of the two parts of which we are composed.

When we consider the various occupations of men, we have every reason to believe that they have such a low and crude opinion of themselves. For as they all love felicity and the perfection of their being, and as they strive only to make themselves happier and more perfect, are we not compelled to judge that they have a higher estimate of their body and the goods of their body than of their

[a] "Mens, quod non sentit, nisi cum purissima & beatissima est, nulli cohaeret, nisi ipsi veritati, quae similitudo & imago patris, & sapientia dicitur." Aug. *Lib. imp. de Gen. ad litt.* [par. 60.]

mind and its goods? For we see them almost constantly occupied with things related to the body, and they hardly think at all about things that are absolutely necessary for the perfection of their mind.

Most of them toil and struggle only to eke out a miserable existence, and to leave to their children some of the assistance necessary for the preservation of their bodies.

Those who, through good fortune or through their luck at birth, are not subject to this necessity, give no better evidence by their conduct that they regard their soul as the most noble part of their being. Hunting, dancing, gambling, and good living are their usual pursuits. Their soul, as the slave of the body, prizes these diversions, though they are completely unworthy of it. But because their body is related to all sensible objects, their soul not only is the slave of the body but is, moreover, the slave of all sensible things through or because of the body. For through the body, they are related to their family, their friends, their town, their positions, and to all sensible goods whose preservation seems to them as necessary and worthwhile as the preservation of their own being. Thus, care for their goods and desire to increase them, the passion for glory and grandeur, move them and occupy them infinitely more than the perfection of their soul.

Even the learned and those who pride themselves on their intelligence spend more than half their life in purely animal actions or ones that lead one to believe they care more for their health, their goods, and their reputations than for the perfection of their mind. They study more to acquire a spurious grandeur in the imagination of other men than to strengthen and extend their mind. They turn their head into a kind of furniture warehouse into which they indiscriminately cram anything bearing some mark of erudition, i.e., anything that might appear rare and extraordinary and that might excite other men's admiration. They glory in assembling those collections of curiosities and antiques, which have no value or solidity and whose price depends only on whim, passion, and chance; they hardly ever strive to set their mind in order and control the impulses of their heart.

Yet men are not altogether unaware that they have a soul and that the soul is the most important part of their being.[a] They have also been convinced a thousand times over by both reason and experience that it is no great advantage to have fame, riches, and health for a few years, and, in general, that all bodily goods and those we possess only through or because of the body are passing, imaginary goods. Men know that it is better to be just than to be rich, to be reasonable than to be learned, to have a lively and penetrating mind than to have a swift and agile body. These truths cannot be erased from their mind, and they infallibly discover them when it pleases them to think about them. For example, Homer, who praises the swiftness of his hero, could have seen, had he wished to, that this is the praise one should give to hunting dogs and horses. Alexander, so celebrated in history for his plundering exploits, sometimes heard in the most secret recesses of his reason the same reproaches that murderers and thieves hear, in spite of the tumultuous din made by the crowd of flatterers surrounding him. And Caesar crossing the Rubicon could not conceal the reproaches that terrified him when he finally resolved to sacrifice his country's freedom to his own ambition.

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[a] "Non exigua hominis portio, sed totius humanae, universitatis substantia est." Amb. 6. hexa. 7.

Although closely joined to the body, the soul is still joined to God, and even while it receives these lively and confused sensations through the body and is moved by its passions, it is informed of its duty and its disorders by the eternal Truth that presides over its mind.[a] When its body misleads it, God sets it right; when the body flatters it, God castigates it; when the body praises and acclaims it, God afflicts it internally with bitter reproaches and condemns it by the manifestations of a law that is purer and more holy than the law of the flesh it has followed.

Alexander did not need the Scythians to come and teach him his duty in a foreign tongue;[b] he knew the rules of justice he should have followed from the same one who instructs the Scythians and the most barbaric nations. The light of truth that illumines everyone illumined him as well; and the voice of nature,[c] which speaks neither Greek nor Scythian nor any barbarian tongue, spoke to him, as it does to the rest of men, a very clear and very intelligible language. The Scythians reproached him in vain for his conduct; they spoke only to his ears. Since God did not speak to his heart or, rather, since God did speak to his heart, but while he was listening only to the Scythians, who succeeded but in arousing his passions and in directing his attention away from himself, he failed to hear the voice of truth (though it had struck him), and to see its light (though it had penetrated him).

It is true that our union with God is diminished and weakened to the extent that our union with sensible things is increased and strengthened; but it is impossible that this union should be entirely broken without the destruction of our being, for while those plunged in vice and intoxicated with pleasures might be insensible to the truth, they are yet joined to it.[d] The truth does not abandon them, it is they who abandon the truth. Its light shines in the darkness but does not always dispel it, just as the sun's light surrounds those who are blind or who shut their eyes, although it enlightens neither of them.[e]

The same is true of our mind's union with our body.[f] This union diminishes as our union with God increases, but it is entirely broken only by our death. For even if we were as enlightened and as detached from all sensible things as were the Apostles, there is still the necessity stemming from Original Sin that our mind should depend on our body, and that we should feel the law of our flesh resisting and constantly opposing the law of our mind.

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[a] "Ubique veritas praesides omnibus consulentibus te, simulque respondes omnibus etiam diversa consulentibus. Liquide tu respondes, sed non liquide omnes audiunt. Omnes unde volunt consulunt, sed non semper quod volunt audiunt." Aug. *Confess.* bk. 10. ch. 26.

[b] Vid. *Quint. Curc.* bk. 7. ch. 8.

[c] "Intus in domicilio cogitationis, nec Hebraea, nec Graeca, nec Latina, nec Barbara VERITAS, sine oris & linguae organis, sine strepitu syllabarum." Aug. *Confess.* bk. 11. ch. 3.

[d] "Videtur quasi ipse a te occidere cum tu ab ipso occidas." Aug. on Ps. 25 [*Ennar.* 2:3].

[e] "Nam etiam sol iste, & videntis faciem illustrat & caeci; ambobus sol praesens est, sed praesente sole unus absens est. Sic & Sapientia Dei Dominus Jesus Christus ubique praesens est, quia ubique est veritas, ubique Sapientia." Aug. on St. John, *Tract.* 35.

[f] What I say here about the mind's two unions with God and the body should be understood according to the ordinary way of conceiving things. For it is true that the mind can be immediately

The mind becomes purer, more luminous, stronger, and of greater scope as its union with God increases, because this union constitutes its entire perfection. It becomes corrupted, blind, weakened, and restricted as its union with its body is increased and strengthened, because this union constitutes all its imperfection. Thus, a man who judges all things by his senses, who follows the impulses of his passions in all things, who perceives only what he senses and loves only what flatters him, is in the most wretched state of mind possible. In this state he is infinitely removed from the truth and from his good. But when a man[a] judges things only according to the mind's pure ideas, when he carefully avoids the noisy confusion of creatures, and, when entering into himself, he listens to his sovereign Master with his senses and passions silent, it is impossible for him to fall into error.

God never deceives those who consult Him with serious purpose and with their mind turned fully toward Him, although He does not always make them hear His responses; but when the mind turns from God and expends itself externally, when it consults only its body to be instructed in the truth, when it listens only to its senses, imagination, and passions, which speak to it constantly, then it must of necessity be deceived. Wisdom and perfection and felicity are not goods to be hoped for from the body; He who alone is above us, and from whom we have received our being, is the only one who can perfect it.

This is what Saint Augustine teaches us with these elegant words.[b] "Eternal wisdom," he says, "is the source [*principe*] of all creatures capable of understanding, and this immutable wisdom never ceases speaking to His creatures in the most secret recesses of their reason so that they might be inclined toward Him, their source, because only the vision of eternal wisdom gives minds being, only eternal wisdom can complete them, so to speak, and give them the ultimate perfection of which they are capable." "When we see God as He is in Himself, we will be like unto Him," says the apostle Saint John.[c] Through this contemplation of eternal truth, we shall be exalted to the heights toward which all spiritual creatures tend by the necessity of their nature. But while we are on earth, the

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joined only to God, i.e., it depends only on Him. And it is joined to, or depends on the body, only because the will of God is efficacious in establishing this union, which since the Fall has had its order of dependence reversed, but all this will be made clearer in what follows.

[a] Quis enim bene se inspiciens non expertus est, tanto se aliquid intellixisse sincerius, quanto removere atque subducere intentionem mentis a corporis sensibus potuit." Aug. *De immortalitate animae* ch. 10.

[b] "Principium creaturae intellectualis est aeterna sapientia, quod principium manens in se incommutabiliter, nullo modo cessat occulta inspiratione vocationis loqui ei creaturae, cui principium est, ut convertatur ad id ex quo est; quod aliter formata ac perfecta esse non possit." *Lib. imp. de Gen. ad litt.* ch. 50 [ch. 5].

[c] "Scimus quoniam cum apparuerit similes ei erimus, quoniam videbimus eum sicuti est." *Tract.* on St. John's Epistle One, ch. 3, v. 2.

body "weighs down the mind," [a] constantly withdraws it from the presence of God or the inner light that illumines it; it strives constantly to strengthen its union with sensible objects, and it forces it to represent things not as they are in themselves, but according to the relation they have to the preservation of life.

The body, according to the Book of Wisdom,[b] fills the mind with so many sensations that it becomes incapable of knowing things that are at all hidden. Corporeal vision dazzles and distracts the mind's vision so that there is great difficulty in clearly seeing a given truth with the soul's eyes while we are using the body's eyes to know it. This shows that it is only by the mind's attention that any truths are discovered or any sciences acquired, because the mind's attention is in fact only its conversion and return to God, who is our sole Master,[c] who alone teaches us all truth through the manifestation of His substance, as Saint Augustine says,[d] and without the intervention of any creature.

From all this it is clear that we must constantly resist the body's influence on the mind, and that because we should not pause over, or occupy ourselves with, anything that belongs to the sensible order, we must gradually become accustomed to disbelieving the reports our senses make about all the bodies surrounding us, which they always portray as worthy of our application and respect. This is one of the truths that the eternal Wisdom apparently wished to teach us by His Incarnation;[e] for after having exalted a body to the highest conceivable dignity, He showed us through the degradation to which He reduced this same body (i.e., through the degradation of the most estimable of sensible things) the scorn we should have for all the objects of our senses. Saint Paul perhaps had the same reason for saying that he no longer knew Christ according to the flesh.[f] Not the flesh of Christ, but the mind concealed by the flesh should be the object of our attention—"Caro vas fuit, quod habebat attende, non quod erat," says Saint Augustine.[g] Whatever of Christ is perceptible deserves our reverence only because of its union with the Word, which cannot be the object of anything but the mind alone.

It is absolutely necessary for those who wish to become happy and wise to be convinced to the core of what I have just said. It is not enough that they should

[a] "Corpus quod corrumpitur aggravat animam." Wisd. 9:10 [9:15].

[b] Terrena inhabitatio deprimit sensum multa cogitantem, & difficile aestimamus quae in terra sunt, & quae in prospectu sunt invenimus cum labore." Wisd. 9:15.

[c] "Aug. *De magistro* [11–12].

[d] "Deus intelligibilis lux, in quo, & a quo, & per quem intelligibiliter lucent, quae intelligibiliter lucent omnia." 1 *Sol*. [1:3].

"Insinuavit nobis [Christus] animam humanam & mentem rationalem non vegetari, non illuminari, non beatificari, nisi ab ipsa SUBSTANTIA Dei." Aug. *Tract*. 23 on St. John. "Nulla natura interposita." Quest. 83, q. 51.

[e] "Illa auctoritas divina dicenda est, quae non solum in sensibilibus signis transcendit omnem humanam facultatem, sed & ipsum hominem agens, ostendit ei quo usque se propter ipsum depresserit, & non teneri sensibus quibus videntur illa miranda, sed ad intellectum jubet evolare, simul demonstrans & quanta hic possit, & cur haec faciat, & quam parvi pendat." Aug. 2 *De ord*. 9.

[f] "Et si cognovimus secundum carnem Christum, jam non secundum carnem novimus." 2 Cor. [5:16].

[g] *Tract*. 27 on St. John.

take my word, or that they should be persuaded by the luster of some fleeting light; they must be convinced of it by a thousand unquestionable proofs and experiences. These truths must be indelible in their mind and must always be present to them while they pursue their studies and all the other activities of their life.

Those who take the trouble to read carefully the work that I am now publishing will, unless I am mistaken, enter into this frame of mind; for in it I demonstrate in several ways that our senses, our imagination, and our passions are altogether useless for discovering the truth and our good, that, on the contrary, they dazzle us and seduce us in every instance, and generally that all the knowledge the mind receives through the body, or on account of some motion occuring in the body, is false and confused in relation to the objects it represents (although this knowledge is quite useful to the preservation of the body and of goods related to the body).

In this work I combat several errors and especially those most universally received or those that cause a greater disorder of the mind, and I show that these errors are almost all consequences of the mind's union with the body. In several places I try to make the mind realize its servitude and dependence relative to all sensible things so that it might be awakened from its somnolence and make an effort to free itself.

I am not content simply to present our errors, but I go further and partially explain the mind's nature. I do not bother, for example, to make a detailed enumeration of all the particular errors of the senses or of the imagination, but I consider mainly the causes of these errors. In the explanation of these faculties and the general errors into which we fall, I show in a single perspective the almost infinite number of particular errors into which we can fall. Thus, the subject of this work is the mind of man in its entirety. I consider it in itself, in relation to the body, and in relation to God. I examine the nature of all its faculties and set out the uses we ought to make of them in order to avoid error. Finally, I explain most of the things I have believed useful for advancing the knowledge of man.

The most beautiful, the most pleasant, and the most necessary of all our knowledge is, undoubtedly, the knowledge of ourselves. Of all the human sciences, the science of man is the most worthy. Yet this science is neither the most cultivated nor the most complete that we possess; ordinary men neglect it altogether. Even among those who take pride in science, there are very few who apply themselves to this science, and there are still fewer who apply themselves to it with any success. Most of those whom everyone regards as competent see in only very confused fashion the essential difference between the mind and the body. Saint Augustine himself, who distinguished these two beings so well, confesses that for a long while he was unable to see the difference.[a] And although it must be agreed that he explained the properties of the soul and the body better than all those who preceeded him and who have followed him until our own time, nonetheless, he would have done better not to attribute to the bodies surrounding us all the sensible qualities we perceive by means of them, for in the final analysis these qualities are not clearly contained in the idea that he had of matter. As a result, it can be said with some assurance that the difference between the mind and the body has been known with sufficient clarity for only a few years.

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[a] *Confess.* bk. 4. ch. 5.

Some people imagine that they fully understand the nature of the mind; others are convinced that it is impossible to know anything about it; but the greatest number do not see of what use this knowledge would be and therefore scorn it altogether. But these views, which are so widespread, are more the effects of men's imagination and inclination than the consequences of a clear and distinct perception of their mind. They have these views because they find it bothersome and distasteful to enter into themselves in order to seek out their weaknesses and infirmities, and because they take pleasure in exotic studies and in those sciences that are glamorous. Never being within themselves, they do not see the disorder occurring there; they think they are well because they do not sense themselves. They even find fault with those who, in realizing their own illness, begin to remedy it; they say they make themselves sick because they try to cure themselves.

But these great geniuses who unlock nature's most hidden secrets, and who in spirit reach the heavens and descend into the abysses, should remember what they are. These great objects might only dazzle them. In order to attain such things, the mind must go out of itself, but it can do so only at the cost of its own dissipation.

Men were not born to become astronomers or chemists, spending their whole life hanging onto a telescope or attached to a burner, and then drawing useless conclusions from their painstaking observations. I grant that an astronomer first discovered the regions, seas, and mountains on the moon, first noticed the spots on the sun and calculated their precise motion. I grant that a chemist finally discovered the secret of stabilizing mercury and fabricated the alkahest by means of which Van Helmont boasted he could dissolve all bodies. Have they become any wiser or happier for having done so? They have made a name for themselves in the world, perhaps, but let them beware lest this reputation only extend their servitude.

Astronomy, chemistry, and practically all the other sciences might be regarded as pastimes of an upright man; but men should not let themselves be deceived by their glamour, nor should they prefer them to the science of man. For although the imagination attaches a certain idea of grandeur to astronomy because this science considers great and magnificent objects, which are infinitely above everything around us, still the mind need not blindly reverence this idea. Rather it should become its judge and master, and should strip it of this sensible display that so impresses reason. The mind must judge all things according to its inner lights, paying no heed to the false and confused testimony of its senses and imagination; and if it examines all the human sciences in the pure light of the truth that illumines it, then assuredly it will scorn practically all of them and will have a higher regard for the science that teaches us what we are than for all the others combined.

I prefer, then, to exhort those who have any love for truth to judge the subject of this work according to the responses they receive from the sovereign Master of all men after they have consulted Him through some serious reflection; [I prefer this rather than] prejudicing them with some great discourse that they might take for either mere commonplaces or for the vain ornamentation of a preface. But should they judge this subject to be worthy of their serious attention, I again beg them not to judge the things contained in this work according to how well they are expressed, but always to enter into themselves in order to hear the decisions they must follow and according to which they must judge.

Convinced as we are[a] that men cannot teach one another and that those who listen to us do not learn the truths we address to their ears unless He who has revealed them to us at the same time reveals them to their mind as well, we still find ourselves obliged to warn those who wish to understand this work not to believe us at our word through inclination, nor to oppose what we say through aversion. For while I do not think I have proposed anything new without having been convinced of it after serious thought, still it would be very regrettable for others to content themselves with merely remembering and believing my views without really knowing them, or for them to fall into error either for misunderstanding my views or because I was mistaken.

The pride of certain scholars who would have us believe them on their word seems to us intolerable. They complain should we consult God after they have spoken, because they themselves have not consulted Him; they become annoyed as soon as any of their views are opposed, and they really want the darkness of their imagination to be given preference over the pure light of truth that illumines the mind.

This is far from our sort of behavior, thanks be to God, although it is often attributed to us. We consider previous authors as but *prompters*.[b] We would be very unjust and vain, then, to wish to be listened to like doctors and masters. We ask that the facts and experiences we relate be believed (for these things are not learned by applying the mind to sovereign and universal Reason); but as for all the truths that are discovered within the true ideas of things (which the eternal Truth represents to us in the most secret recesses of our reason), we expressly warn that our opinions about them should not be taken as final, for we take it to

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[a] "Nolite putare quemquam hominem aliquid discere ab homine. Admonere possumus per strepitum vocis nostrae; si non sit intus qui doceat, inanis fit strepitus noster." Aug. on St. John [ad Parthos, 3. 13].

"Auditus per me factus, intellectus per quem? Dixit aliquis & ad cor vestrum, sed non eum videtis. Si intellexistis, fratres, dictum est & cordi vestro. Munus Dei est intelligentia." Aug. *Tract.* 40 on St. John.

<[b] *Moniteurs.* The word translates Ambrosius Victor's *monitor,* as apposed to *magister,* teacher or master.—Trans.>

be no small crime to liken oneself to God by dominating other minds in this way.[a]

The main reason why I wish those who read this book to do so as carefully as they can is that I wish to be taken to task for the errors that I may have committed in it, for I do not fancy myself to be infallible. We have such a close tie with our body and depend on it so much that we do well to be apprehensive about not always having distinguished the cacophony with which the body fills the imagination from the pure voice of the truth that speaks to the mind.

If only God spoke to us, and if we judged only according to what we heard, we could perhaps avail ourselves of the words of Christ,[b] "I judge according to what I hear and my judgment is just and true." But we have a body which speaks louder than God Himself, and this body never tells the truth; we have self-love that corrupts the words of Him who always tells the truth; and we have pride that inspires the audacity to judge without waiting for the replies of Truth, according to which alone we should judge. For the main cause of our errors is that our judgments cover more things than fall under the clear perception of our mind. Therefore, I entreat those to whom God will show my errors to correct me in order that this work that I present as a tentative undertaking, and whose subject matter is most worthy of men's attention, might gradually be perfected.

At first, I undertook this work only for the purpose of my own instruction, in order to learn to think well, and to set out clearly what I did think; but as certain people thought that it would be worthwhile to publish it, I submitted to their arguments all the more voluntarily as one of their main arguments agreed with the desire I had to help myself. The real way, they said, of fully instructing yourself in any matter is to propose your opinions on the matter to competent people. This arouses the interest of both of you; sometimes they have other views and discover other truths than yours, and they sometimes put forth certain discoveries that you have neglected through laziness, or that you have given up through lack of strength and courage.

With this view toward my own advantage as well as that of others, I chanced becoming an author; but lest my hopes be entirely in vain, I give this counsel: that you should not immediately lose heart should you find things that upset the ordinary views you have held your whole life or that you find generally accepted by all men down through the ages. These are the most general errors that I especially try to overthrow. If men were fully enlightened, universal approbation would be an argument, but just the opposite is the case. Be advised, then, once and for all, that only Reason should stand in judgment on all human opinions not related to faith (in which God alone instructs us in an entirely different way from that in which He reveals natural things to us). Let us enter into ourselves and draw near the light that constantly shines there in order that our reason might be more illumined. Let us carefully avoid all sensations that are too lively, as well as the emotions of the soul that exhaust the capacity of our weak intelligence. For the slightest sound or the least flash of light sometimes dissipates the mind's perception so that, although it is not absolutely necessary to do so, it is good to avoid all these things. And if in striving to do these things we are unable to resist the prejudices of our youth or the continuous impressions made on our imagination by the body, recourse to prayer is necessary in order to receive what we ourselves cannot provide;[a] and in any case we must constantly resist our senses, for this must be the continuous occupation of those who, following Saint Augustine, love the truth a great deal. "Nullomodo resistitur corporis sensibus; QUAE NOBIS SACRATISSIMA DISCIPLINA EST, si per eos inflicitis plagis vulneribusque blandimur." Ad Nebridium. Ep. 7. *How this work is divided up will be explained in the fourth chapter.*

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[a] See St. Augustine's *De magistro* [14]. "Noli putare te ipsam esse lucem." Aug. *Enarrations* [On Psalm 25 par. 11].

"Non a me lumen existens, sed lumen non participans nisi IN TE." *De verbis Domini*. ser. 8.

[b] Sicut audio sic judico, & judicium meum justum est, quia non quaero voluntatem meam." John 5:30.

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[a] "Qui hoc videre non potest, oret & agat ut posse mereatur, nec ad hominum disputatorem pulset, ut quod non legit legat, sed ad Deum salvatorem, ut quod non valet, valet." Ep. 112. h. 12.

"Suplexque illi qui lumen mentis accendit attendat, ut intelligat." *Contra ep. fundam.* ch. 33 [33].

Foreword to This Last Edition

I feel that I should advise the reader that of all the editions of *The Search after Truth* produced in Paris and elsewhere, this is the most precise and the most complete. For beside the fact that I had use of the preceding edition, which itself was better than its predecessors, I have also added several elucidations on passages I thought had need of them. Since in the Sixteenth Elucidation I have advanced a view contrary to Descartes's on subtle matter, I felt I had to explain this view at greater length because it seemed clear to me that it unraveled a great many difficulties encountered in explaining the most general effects of nature. I illustrate this with several examples in what I have added to the Sixteenth Elucidation. I have also added to the end of this work a kind of condensation of optics because it would have been too long as an Elucidation and would have interrupted the continuity. I caution that in order to conceive clearly what I say about the errors of vision, those who do not know how the eyes are constructed or how they function in seeing objects should read this last Elucidation either before or at the same time that they read what I say about the errors of vision in the first book. Perhaps even those who have studied optics will learn enough from it to compensate for their trouble in reading it.

Since my other works are closely related to *The Search after Truth,* there would be no point in making further additions to it, for I hope that those who carefully read my other writings that I have cited in the margin for this purpose will find in them all the elucidations they might desire and even many truths of the utmost importance. It is impossible both to say everything and elucidate everything at the same time, for truths have too many connections among them; as a result, by dint of our desire to clarify, we confuse everything. You will still find certain obscurities and equivocations in this work, then, either through my fault or through your own; but your attentiveness, your equity, and the power you have of suspending your judgment until clarity appears can set all things straight, for the true is conceived clearly, while the false is absolutely incomprehensible.

Since several different editions of my books have been published, most of which are imperfect and in need of correction, and on the basis of which, nonetheless, translations into foreign languages have been made, I feel I must give notice that, of all which have come to my attention, the most accurate in terms of meaning (for I am not speaking about mistakes that are not troublesome and that the reader might correct, such as punctuation, spelling, and the like) are: The *Conversations chrétiennes,* Paris edition of 1702. The *Traité de la nature et de la grace,* the last Rotterdam edition, published this year. The *Traité de morale* printed in Lyon in 1707. The *Méditations Chrétiennes,* also printed in Lyon in 1707. The *Réponses à M. Arnauld,* Paris, 1709. The *Entretiens sur la métaphysique & sur la religion,* Paris, 1711. The *Traité de l'amour de Dieu,* and the sequel, Lyon, 1707. I have listed these works in the order in which they were written, so that those who wish to read and to judge them might follow this order and explain by means of the later works what they may have found obscure in the earlier ones.

All these works are to be found at: Michael David, Quai des Augustins, à la Providence.

BOOK ONE: THE SENSES
Chapter One

I. The nature and properties of the understanding. II. The nature and properties of the will, and what freedom is.

Error is the cause of men's misery; it is the sinister principle that has produced the evil in the world; it generates and maintains in our soul all the evils that afflict us, and we may hope for sound and genuine happiness only by seriously laboring to avoid it.

Sacred Scripture teaches us that men are miserable only because they are sinners and criminals, and they would be neither if they had not enslaved themselves to sin by consenting to error.

If it is true, then, that error is the origin of men's misery, it is fitting that men make an effort to deliver themselves from it. Certainly their effort will by no means be useless and without recompense, even though it might not have the complete result they may desire. If men do not become infallible, they will err much less; and if they do not deliver themselves entirely from their ills, they will at least avoid some of them. Complete felicity must not be hoped for in this life, because on earth we must not lay claim to infallibility. But we must always labor to avoid error, since we always desire to be delivered from our miseries. In a word, as we eagerly desire happiness without hoping for it, we must strive for infallibility without laying claim to it.

It should not be imagined that there is much to be endured in the search after truth. All that is required is to become attentive to the clear ideas that each of us finds in himself and to follow precisely the several rules that we shall give later on.[a] Precision of mind has almost nothing irksome about it; it is not at all a servitude as the imagination represents it, and if at first we find it somewhat difficult, we soon obtain results that amply reward our pains, for ultimately it alone produces light and discloses the truth to us.

But without pausing further to prepare the mind of the reader, of whom it is much more appropriate to believe that he is sufficiently inclined by himself to the search after truth, let us examine the causes and the nature of our errors; and since the method that examines things by considering them in their birth and origin is more orderly and illuminating, and makes them known more thoroughly than any other, let us try to put it into practice here.

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[a] Bk. 6 [pt. 2, ch. 1].

I. The nature and properties of the understanding.

Being neither material nor extended, the mind of man is undoubtedly a simple, indivisible substance without composition of parts; but nonetheless, it is customary to distinguish two faculties in it, to wit, the *understanding* and the *will*, which first need to be explained so that we can attach a precise notion to these two words, for it seems that our notions or ideas of these two faculties are neither clear nor distinct enough.

But because these ideas are quite abstract and do not fall within the scope of the imagination, it seems appropriate to express them by comparison with the properties that belong to matter. These properties, being more easily imagined, will make the notions properly attached to the two words *understanding* and *will* more distinct and even more familiar. It should be noted only that these comparisons between mind and matter are not entirely appropriate, and that I compare them only in order to make the mind more attentive, and, as it were, to illustrate my meaning to others.

Matter or extension contains two properties or faculties. The first faculty is that of receiving different figures, the second, the capacity for being moved. The mind of man likewise contains two faculties; the first, which is the *understanding,* is that of receiving various *ideas,* that is, of perceiving various things; the second, which is the *will,* is that of receiving *inclinations,* or of willing different things. We shall first of all explain the analogies found between the first of the two faculties belonging to matter, and the first of those that belong to the mind.

Extension can receive two kinds of figure. Some are external only, like the roundness of a piece of wax; others are internal, and characterize all the particles of which the wax is composed, for all the particles that make up a piece of wax undoubtedly have figures quite different from those that make up a piece of iron. Figure that is external, then, I call simply *figure,* and I call *configuration* that figure which is internal and which is necessary to all the parts of the wax in order for it to be what it is.

We can likewise say that the soul's perceptions of ideas are of two kinds. The first, which are called pure perceptions, are, as it were, superficial to the soul: they do not make an impression on it and do not sensibly modify it. The second, which are called sensible, make a more or less vivid impression on it. Such are pleasure and pain, light and colors, tastes, odors, and so on. For it will be seen later on that sensations are nothing but modes of the mind [*manieres d'être de l'esprit*], and it is for this reason that I call them *modifications* of the mind.

Inclinations of the soul might also be called *modifications* of the soul. For since it is certain that the inclination of the will is a mode of the soul [*maniere d'être de l'ame*], it can be called a *modification* of the soul, just as motion in bodies being a mode of those bodies, we might say that motion is a *modification* of matter. Nevertheless, I do not call inclinations of the will or motion in matter modifications, because these inclinations and instances of motion are ordinarily related to something external, for inclinations are related to the good, and motion is related to some foreign body. But the figures and configurations of bodies and the sensations of the soul have no necessary relation to anything external. For just as a figure is round when all the exterior parts of a body are equally distant from one of its parts called its center, independently of any external body, so all the sensations of which we are capable could subsist without there being any object outside us. Their being contains no necessary relation to the bodies that seem to cause them (as will be proved elsewhere), and they are nothing but the soul modified in this or that fashion; consequently, they are indeed *modifications* of the soul. Let me therefore so name them in order to clarify matters.

The first and principal agreement found between the faculty that matter has of receiving different figures and configurations and that which the soul has of receiving different *ideas* and *modifications* is that just as the faculty of receiving different figures and configurations in bodies is entirely passive and contains no action, so the faculty of receiving different ideas and modifications in the mind is entirely passive and contains no action; and I call that faculty, or that capacity which the soul has of receiving all these things, UNDERSTANDING.

From this it must be concluded that it is the understanding that perceives or that knows, since only it receives ideas of objects; for it is the same thing for the soul to perceive an object as to receive the idea that represents the object. Also, it is the understanding that perceives modifications of the soul, or that senses them, since I understand by this word *understanding* that passive faculty of the soul by means of which it receives all the modifications of which it is capable. For it is the same thing for the soul to receive the mode called pain as to perceive or sense pain, since it cannot receive pain in any other way than by perceiving it. From this it can be concluded that it is the understanding that imagines absent objects and senses those that are present, and that the *senses* and the *imagination* are nothing but the understanding perceiving objects through the organs of the body, as we shall explain later on.

But because when we sense pain, or anything else, we ordinarily perceive it through the mediation of the *sense* organs, men ordinarily say that the senses do the perceiving, without knowing distinctly what they mean by the word *sense*. They think there is some faculty distinct from the soul that enables it or the body to sense, for they believe that the sense organs really take part in our perceptions. They imagine that the body so aids the mind in sensing that if the mind were separated from the body, it could never sense anything. But they believe all these things only through prejudice, and because in our present state we never sense anything without the use of the sense organs, as we shall explain elsewhere at greater length.

In order to conform to the ordinary way of speaking, we shall say in what follows that the senses do sense; but by the word *sense* we mean nothing other than that passive faculty of the soul we have just spoken about, that is, the understanding perceiving something upon occasion of the appropriate natural events taking place in the organs of its body, as will be explained elsewhere.

The other agreement between the passive faculty of the soul and that of matter is that as matter is not really altered by any change in its figure—I mean, for example, that as wax receives no considerable change for being round or square—so the mind receives no significant change through the diversity of ideas that it has, i.e., though in perceiving a square or a circle it receives the idea of a square or a circle, the mind is not thereby significantly changed.

Furthermore, as matter can be said to receive significant change when a piece of wax changes into fire and smoke by losing the configuration appropriate to the parts of wax in order to receive the configuration appropriate to fire and smoke, so the soul might be said to receive quite significant change when it alters its modifications and suffers pain after having sensed pleasure. From this it must be concluded that pure perceptions are to the soul roughly what figures are to matter, and that configurations are to matter roughly what sensations are to the soul. But it must not be imagined that the analogy is exact; I propose it only in order to make the notion of this word *understanding* perceptible to the senses. The nature of ideas I shall explain in the third book.

II. The nature and properties of the will, and freedom.

The other faculty of matter is that it is capable of receiving various *instances of motion,* whereas the other faculty of the soul is that it is capable of receiving various *inclinations.* Let us compare these *faculties.*

Just as the Author of nature is the universal cause of all *motion* found in matter, so is He also the general cause of all natural *inclinations* found in minds; and just as all motion proceeds in a straight line [*en ligne droite*] unless it encounters particular external causes that influence its course and that by their opposition alter it so that it proceeds in a curved path, so all the inclinations that we have from God are right [*droites*] and could have no other end but the possession of good and of truth were there not some external cause that directed the impression of nature toward evil ends. Now it is this external cause that is the cause of all our evils, and that corrupts all our inclinations.

For a proper understanding of this, it must be realized that there is a very significant difference between the impression or motion that the Author of nature produces in matter, and the impression or impulse [*mouvement*] toward the good in general that the same Author of nature continuously impresses in the mind. For matter is altogether without action; it has no force to arrest its motion or to direct it and turn it in one direction rather than another. Its motion, as has just been said, always proceeds in a straight line; and when it is impeded from continuing in this way, it describes the greatest possible circular path and consequently most approximates a straight line, because God impresses its motion on it and controls its direction. But such is not the case with the will,[a] which in a sense can be said to be active, because our soul can direct in various ways the inclination or impression that God gives it. For although it cannot arrest this impression, it can in a sense turn it in the direction that pleases it, and thus cause all the disorder found in its inclinations, and all the miseries that are the certain and necessary results of sin.

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[a] See the *Elucidations* [1].

Consequently, I propose to designate by the word WILL, or capacity the soul has of loving different goods, *the impression or natural impulse that carries us toward general and indeterminate good;* and by FREEDOM, I mean nothing else but *the power that the mind has of turning this impression toward objects that please us so that our natural inclinations are made to settle upon some particular object,* which inclinations were hitherto vaguely and indeterminately directed toward universal or general good, that is, toward God, who alone is the general good because He alone contains in Himself all goods.

From this it is easy to see that although natural inclinations are voluntary, they are still not free with the freedom of indifference of which I speak, which contains the potential of willing or not willing, or even of willing the contrary of what our natural inclinations carry us toward. For although it is voluntarily and freely, or without constraint, that we love good in general (since we can love only by the will, and since it is a contradiction that the will should ever be constrained), we nonetheless do not love it freely in the sense I have just explained, since it is not in the power of our will not to wish to be happy.

But it must be carefully noted that insofar as a mind is thrust toward good in general, it cannot direct its impulse toward a particular good unless that same mind, insofar as it is capable of ideas, has knowledge of that particular good. In plain language, I mean that the will is a blind power, which can proceed only toward things the understanding represents to it. As a result, the will can direct both the impression it has for good, and all its natural inclinations in various ways, only by ordering the understanding to represent to it some particular object.[a] The power our soul has of directing its inclinations therefore necessarily contains the power of being able to convey the understanding toward the objects that please it.

I shall clarify by an example what I have just said about the will and freedom. A person represents some honor to himself as a good that he might hope for; the will immediately wills this good; that is, the *impression* toward indeterminate and universal good that the mind is continuously receiving conveys it toward this honor. But as this honor is not the universal good, and is not considered as the universal good by a clear and distinct perception of the mind, for the mind never sees clearly what is not universal, the *impression* that we have toward the universal good is not entirely brought to rest by this particular good. The mind tends to proceed still further; it does not necessarily and indomitably love this honor, and it is free with regard to it. Now its *freedom* consists in the fact that not being fully convinced that this honor contains all the good it is capable of loving, it can suspend its judgment and love, and then, as we shall explain in the third book, by its union with the universal being, or the being that contains all good, it can think about other things and consequently love other goods. Finally, it can compare all goods, love them according to order to the extent to which they ought to be loved, and relate them all to that which contains all goods and which, being alone capable of fulfilling our total capacity of loving, is alone worthy of limiting our love.

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[a] See the *Elucidations* [2].

It is roughly the same thing with the knowledge of truth as with love of good. We love knowledge of truth, like enjoyment of good, by a natural impression; and this impression, like the one that conveys us toward the good, is not indomitable—only through clarity or through complete and perfect knowledge of the object is it indomitable; and we are as free in our false judgments as in our inordinate loves, as will be shown in the next chapter.

BOOK ONE: THE SENSES
Chapter Two

I. Judgments and inferences. II. That they depend on the will. III. The use that should be made of freedom with regard to them. IV. Two general rules for avoiding error and sin. V. Requisite comments on these rules.

I. Judgments and inferences.

It might fairly be concluded from what we have said in the preceding chapter that the understanding never judges since it does nothing but perceive (or that judgments and inferences on the part of the understanding are but pure perceptions), that it is the will alone that really judges by assenting to, and voluntarily remaining with, what the understanding represents to it, and that thus it alone plunges us into error. But these matters must be explained at greater length.

I say, then, that there is no difference on the part of the understanding between a simple perception, a judgment, and an inference, other than that the understanding by a simple perception perceives a simple thing without any relation to anything else whatsoever, that in judgments it perceives the relations between two or more things, and that in inferences it perceives the relations among the relations of things. Consequently, all the *operations*[a] of the understanding are nothing but *pure perceptions.*

It is only a *simple perception* when, for example, one perceives twice two or four. When one judges that twice two is four, or that twice two is not five, the understanding still does nothing but perceive the relation of equality found between twice two and four, or the relation of inequality found between twice two and five. Thus *judgment* on the part of the understanding is only *the perception of the relation found between two or more things.* But *inference* is the perception of the relation found, not between two or more things, for this would be a judgment, but *the perception of the relation found between two or more relations of two or more things.* Thus, when I conclude that, four being less than six, twice two, being equal to four, is consequently less than six, I perceive not only the relation of inequality between twice two and six, for this would be only a judgment, but also the relation of inequality between the relation of twice two and four, and the relation between four and six, which is an inference.

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[a] Here I am obliged to speak in ordinary language. It will be seen at the appropriate time that these operations of the understanding are nothing but modifications produced in the soul through the efficacy of the divine ideas as a result of the laws concerning the union of the soul with Sovereign Reason and with its own body.

The understanding, therefore, does nothing but perceive the relations between ideas, which relations, when they are clear, are expressed by clear ideas; for the relation of six to three, for example, is equal to two, and is expressed by two. And only the will judges and reasons, by voluntarily remaining with what the understanding represents to it, as has just been said.

II. That judgments and inferences depend on the will.

But nevertheless, when the things we consider are altogether evident, it seems to us that we no longer consent to them voluntarily. As a result, we are led to believe that it is not our will but our understanding that judges them.

In order to recognize our error, it must be realized that the things we consider appear entirely evident to us only when the understanding has examined them from all sides and has examined all the relations necessary to judge them. Whence it happens that the will, being unable to function without knowledge, can no longer act on the understanding, that is, the will cannot further desire that the understanding represent something new in its object because it has already considered all aspects related to the question to be decided. It is therefore obliged to rest with what the understanding has already represented, and to cease activating it and applying it to useless considerations. This repose is what is properly called judgment and inference. Thus, this repose or judgment, not being free when things are completely evident, also seems to us not to be voluntary.

But to the extent that there is something obscure in the subject we are considering, or that we are not entirely certain that we have discovered everything needed to resolve the question, as almost always happens with those that are difficult and contain many relations, we are free not to consent, and the will can still order the understanding to apply itself to something new. This inclines us to believe that the judgments we form on these subjects are voluntary.

Nonetheless, most philosophers maintain that these very judgments we form on obscure things are not voluntary, and they would generally have it that consent to truth is an action of the understanding, which they call assent, *assensus,* as opposed to consent to good, which they attribute to the will and call consent, *consensus.* But here is the source of their distinction and their mistake.

In our present state, we often clearly perceive truths with no reason to doubt them, and hence the will is not at all indifferent in the consent it gives to these evident truths, as we have just explained. But it is not the same with goods, of which we know none without some reason to doubt that we ought to love it. Our passions and the inclinations we naturally have for sensible pleasures are confused but very strong reasons due to the corruption of our nature. These passions and inclinations make us cold and indifferent in our love even of God; and thus we clearly sense our indifference, and are inwardly convinced that we make use of our freedom when we love God.

But we do not likewise perceive that we make use of our freedom in consenting to truth, especially when it appears altogether evident to us; and this makes us believe that consent to truth is not voluntary. As if it were necessary that our actions be indifferent to be voluntary, and as if the blessed did not love God quite voluntarily, without being diverted by anything whatever, just as we consent to this evident proposition, that twice two is four, without being diverted from believing it by anything indicating otherwise.

But in order to clearly distinguish the will's consent to truth from its consent to goodness, it is necessary to know the difference between truth and goodness taken in the ordinary sense and with reference to us. That difference consists in the fact that goodness concerns and affects us, whereas truth does not; for truth consists only in the relation between two or more things, whereas goodness consists in the relation of agreement things have with us.[a] As a result, there is but one action of the will with regard to truth, which is its assent [*acquiescement*] or consent to the representation of the relation between things; but there are two with regard to goodness, its assent or consent to the relation of agreement between the thing and us, and its love or impulse toward that thing, which actions are quite different, however they might ordinarily be confused. For there is quite a difference between simply assenting and being conveyed by love to what the mind represents, since one often assents to things that one avoids and wishes were nonexistent.

Now if we consider these things closely, we will clearly recognize that it is always the will that assents, not only to things agreeable to it, but to the representation of things; and the reason why the will always assents to the representations of things that are completely evident is, as we have already said, that there is in these things no further relation to be considered that the understanding has not already perceived. Consequently, it is necessary, as it were, for the will to cease its agitation and useless self-exhaustion, and for it to assent with full assurance that, since there is nothing further toward which it can direct its understanding, it is not mistaken.

As it is agreed on all hands that rash judgments are sinful, and that all sin is voluntary, it must also be agreed that it is therefore the will that judges by assenting to the confused, compound perceptions of the understanding. But the question as to whether the understanding alone judges and reasons at bottom seems rather useless and merely a verbal question. I say the understanding alone, for it does have the role in our judgments that I have assigned it, since it is necessary to know or to sense before judging and consenting. Furthermore, as the understanding and the will are but the soul itself, it actually perceives, judges, reasons, wills, and soon. For reasons that will be seen in what follows, I have assigned to the word *understanding* the notion of a passive faculty or a capacity for receiving ideas.

It must especially be noted that in our present state we know things only imperfectly, and that consequently it is absolutely necessary that we have this freedom of indifference by which we can refrain from consenting.

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[a] Geometers do not love the truth, but knowledge of the truth, whatever might otherwise be said.

To see the necessity for this, it must be considered that we are led by our natural inclinations toward truth and goodness, as a result of which, the will, being led only to things that the mind has some knowledge of, must be led to what has the appearance of truth and goodness. But because what has the appearance of truth and goodness is not always what it seems, it is obvious that if the will were not free and if it were infallibly and necessarily led to everything having the appearance of truth and goodness, it would almost always be deceived. From this we could conclude that the Author of its being was the Author of its disorders and errors as well.

III. The use we ought to make of our freedom in order never to err.

Freedom is therefore given by God in order that we may refrain from falling into error, and into all the evils that follow from our errors, by never fully resting with probabilities, but only with truth, i.e., by constantly applying the mind and ordering it to continue investigating until everything to be investigated is unraveled and brought to light. For truth is almost never found except with evidence, and evidence consists only in the clear and distinct perception of all the constituents and relations of the object necessary to support a well-founded judgment.

The use, therefore, that we should make of our freedom is TO MAKE AS MUCH USE OF IT AS WE CAN, that is, never to consent to anything until we are forced to do so, as it were, by the inward reproaches of our reason.

To submit to the false appearances of truth is to enslave oneself against the will of God; but to submit in good faith to these secret reproaches of our reason that accompany the refusal to yield to evidence is to obey the voice of eternal truth that speaks to us inwardly. Here, then, are two rules based on what I have just said, which of all rules are the most necessary for the speculative sciences and for morals, and which can be regarded as the foundation of all the sciences of man.

IV. General rules for avoiding error.

Here is the first, which concerns the sciences. *We should never give complete consent except to propositions which seem so evidently true that we cannot refuse it of them without feeling an inward pain and the secret reproaches of reason;* that is, unless we clearly knew that ill use would be made of our freedom if consent were not willed, or if we willed to extend its power over things no longer in its power.

The second, which concerns morals, is this. *We should never absolutely love some good if we can without remorse refuse to love it.* From this it follows that God alone ought to be loved absolutely and intrinsically, for Him alone can we not abstain from loving without remorse; i.e., provided that He is known through reason or faith, we cannot abstain from loving Him without clearly knowing that we are doing wrong.

V. Requisite comments on these two rules.

But it must be noted here that when the things we perceive appear to us quite probable, we are strongly led to believe them; we even feel pain when we do not let ourselves be persuaded by them. Consequently, if we are not wary, we run the risk of consenting to them and consequently of being mistaken; for it is unlikely that truth should conform completely to probable opinion. For this reason I have expressly made it a point in these two rules that nothing should be consented to until it is clearly seen that we would make ill use of our freedom if we were not to consent.

Now, while we might feel strongly inclined to consent to probability, yet if we are careful to note whether we clearly see that we are obliged to consent to it, we shall undoubtedly find that the answer is no. For if probability is based on our sense-impressions—probability or verisimilitude [*vrai-semblance*] is really a misnomer—we shall then be very much inclined to yield to it; but no other cause of this inclination will be discovered than some passion or general affection we have for what affects the senses, as will be seen in what follows.

If on the other hand probability is due to some conformity with truth, as our probabilistic knowledge, in a certain sense, is ordinarily true, then if one reflects inwardly, one will feel led to do two things: to believe, and to go on investigating. But one will never find himself so persuaded that he clearly believes he is doing something wrong when he does not give complete consent.

Now, these two inclinations we have with regard to probabilities are very sound. For consent can and ought to be given to probabilities insofar as they indicate truth; but complete consent should not yet be given, as we have set out in our rule. The unknown aspects must be examined in order to enter fully into the nature of the thing, to distinguish the true from the false, and then to consent fully if the evidence obliges us to do so.

It is therefore necessary to become well accustomed to distinguishing truth from probability by inward self-examination, as I have just explained, because it is for lack of having attended to self-examination of this sort that we feel affected in almost the same way by two things so different. In short, it is of the greatest importance to make good use of our freedom by always refraining from consenting to things and loving them until forced to do so by the powerful voice of the Author of Nature, which till now I have called the reproaches of our reason and the remorse of our conscience.

All the duties of spiritual beings, as much for angels as for men, consist chiefly in this proper usage; and it can be said without fear that if they use their freedom with care, without becoming slaves of lies and vanity, they are on the road to the greatest perfection of which they are naturally capable, provided, however, that their understanding does not remain idle, that they continually take care to urge it toward new knowledge, and that they make it capable of greater truths by continual meditations on subjects worthy of its attention.

To perfect the mind, it is not enough to make use of freedom by never consenting to anything, like those people who glorify knowing nothing and doubting everything. Nor is it necessary to consent to everything, like certain others, who fear nothing so much as not knowing something, and pretend to know everything. Rather, we must make such good use of our understanding by continual meditations that we can often consent to what it represents to us with no fear of being mistaken.

BOOK ONE: THE SENSES
Chapter Three

I. Replies to some objections. II. Remarks on what was said concerning the necessity for evidence.

It is not very difficult to foresee that the practice of the first rule, of which I have just spoken in the preceding chapter, will not please everyone; and especially those of false learning, who pretend to know everything, who never know anything, and who like to speak boldly about the most difficult things while clearly not understanding the easiest.

They will always echo Aristotle, that only in mathematics must complete certitude be sought, but that morals and physics are sciences in which probability alone suffices; that Descartes made a great mistake in wishing to treat physics as geometry, and that for this reason he did not have success with it; that it is impossible for men to comprehend nature, that its mechanisms and secrets are impenetrable to the human mind; plus an infinity of other vague and ambiguous propositions, which they reel off with pomp and magnificence, and which they support with the authority of a crowd of authors, whose mere names or a couple of whose passages these people boast of knowing.

I would beseech these gentlemen not to speak further about that of which they themselves acknowledge they know nothing, and to check the ridiculous impulses of their vanity by ceasing to compose such thick volumes on matters that, according to their own admission, are unknown to them.

Let these people seriously examine whether it is absolutely necessary either to fall into error or never to give complete consent except to entirely evident things, whether truth attends geometry because geometers observe this rule, and whether the errors into which some have fallen concerning the squaring of the circle, the duplication of the cube, and certain other very difficult problems do not come from some rashness or stubbornness that makes them take probability for truth.

Let them also consider from another point of view whether falsity and confusion do not reign in ordinary philosophy because philosophers are satisfied with probability, which is very easy to find and is so accommodating to their vanity and interests. Is not an infinite diversity of opinion on the same subjects, and hence an infinity of errors, to be found almost everywhere? Nonetheless, a very great number of disciples let themselves be seduced, and blindly submit to the authority of these philosophers without even understanding their views.

It is true that some of them after twenty or thirty years of lost time realize they have learned nothing in their readings, though to say so with sincerity does not please them. They must first have proved in their own way that nothing can be known, and only then do they admit their failure, for they then believe they can do so without being ridiculed for their ignorance.

If we wanted to laugh and amuse ourselves, all we would have to do is ask them about the progress of their fine learning, especially if they were inclined to relate in detail all the hardships they have endured to acquire it.

But although this learned and profound ignorance deserves to be scoffed at, it seems more appropriate to pardon it and to have compassion on those who have spent so many years in learning nothing but that false proposition so hostile to all science and truth, *that nothing can be known.*

Therefore, since the rule I have established is so necessary in the search after truth, as we have just seen, let no one carp at its promulgation. And let not those who do not wish to take the trouble to observe it condemn so illustrious an author as Descartes because he followed it or made every effort to follow it. They would not condemn him so boldly if they knew him on whom they pass so rash a judgment, and if they had not read his works as fictions and romances, which are read for diversion and not meditated upon for instruction. Had they meditated with this author, they would have found within themselves some notion and seeds of the truth he teaches, which might develop despite the cumbersome weight of their false learning.

The Master who teaches us inwardly wills that we listen to Him rather than to the authority of the greatest philosophers. It pleases Him to instruct us, provided that we apply ourselves to what He tells us. By meditation and very close attention we consult Him; and by a certain inward conviction and those inward reproaches He makes to those who do not submit, He answers us.

The works of men must be read in such a way that one does not expect to be instructed by men. He who enlightens the world must be consulted in order that He may enlighten us along with the rest of the world, and if after we have consulted Him He does not enlighten us, it will be because we have improperly consulted Him.

Therefore, whether we read Aristotle, or whether we read Descartes, we should believe neither one of them immediately. We need only meditate as they have done, or ought to have done, as attentively as we can, and then we must obey the voice of our common Master and submit ourselves in good faith to inward conviction and the impulses felt while meditating.

After this, a judgment for or against the authors may be formed. But after the principles of the philosophies of Descartes and Aristotle have been thus digested, the one is then rejected, and the other approved, i.e., his method and his most general principles. Then it can even be guaranteed concerning Aristotle that as his principles have been of no use for two thousand years, no phenomenon of nature will ever be explained by them, although his philosophy has been studied by the ablest people in almost all parts of the world. It can boldly be said of Descartes, on the other hand, that he has penetrated into what appears most hidden to the eyes of men, and that he has shown them a most safe road to the discovery of all the truths a limited understanding can comprehend.

But without dwelling on the opinion we might have of these and all other philosophers, let us always consider them as men; and let not the votaries of Aristotle carp if, after having trod through so many centuries in darkness without finding ourselves any further ahead than we were before, we should finally wish to see clearly what we are doing; or if after having been left to wander like blind men, we should remember that we have eyes with which to try to guide ourselves.

Let us therefore be fully convinced that this rule, *that one must never give complete consent, except to things seen with evidence*, is the most necessary of all the rules in the search after truth; let our mind embrace as true only what appears to us with the evidence it requires. We must be persuaded of this in order to undo our prejudices; and it is absolutely necessary, in order to enter into knowledge of the truth, that we be entirely delivered of our prejudices, for the mind absolutely must be purified before it can be enlightened: *Sapientia prima stultitia caruisse*.

II. Remarks on what was said concerning the necessity of evidence.

Before finishing this chapter, three things must be noted. The first is that I am not presently discussing matters of faith, which evidence does not accompany as it does the natural sciences, the reason for which seems to be that we can perceive things only through the ideas we have of them. But God has given us ideas only insofar as we need them to find our way in the natural order of things according to which He has created us. Thus, given that the mysteries of the faith are of a supernatural order, it should not be astonishing if we have no evidence for them, since we do not even have any ideas of them.[a] This is because our souls were created in virtue of the general decree, by which we have all the notions necessary to us; but the mysteries of faith were established only through the order of grace, which, according to the common view, is a decree subsequent to the order of nature.

The mysteries of faith must therefore be distinguished from the things of nature. We must be equally submissive to faith and evidence; but in matters of faith, evidence must not be sought before belief, just as in matters of nature, one must not stop at faith, that is, at the authority of philosophers. In a word, to be among the Faithful, it is necessary to believe blindly; but to be a philosopher, it is necessary to see with evidence, for divine authority is infallible, whereas all men are subject to error.

Undeniably, there are other truths, besides those of faith, concerning which it would be wrong to ask for incontrovertible demonstrations, such as those regarding the facts of history, and other matters that depend on the will of men. For there are two kinds of truths, those that are *necessary* and those that are *contingent*. I call those truths necessary that by their nature are immutable, or that have been fixed by the will of God, which is in no way subject to change. All others are *contingent* truths. Mathematics, metaphysics, and even a large part of physics and morals contain necessary truths. History, grammar, local custom, and several other things that depend on the changing will of men, contain only *contingent* truths.

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[a] See the *Elucidations* [3].

I ask, then, for a strict observance of the rule just established in our search for necessary truths, the knowledge of which may be called science, but in history, which covers contingent matters, we must be satisfied with the greatest probability. For the term *history* can be applied generally to knowledge of languages, customs, and even the different opinions of philosophers, when they have been learned only by memory, and without any evidence or certitude for them.

The second thing that must be noted is that in morals, politics, medicine, and all the practical sciences, we must be satisfied with probability, not permanently but temporarily—not because probability satisfies the mind but because the need to act is urgent, and if one waits to act until entirely assured of success, the opportunity is often lost. But although we are sometimes forced to act, while acting we must doubt the success of what we do; and we should try to make such progress in these sciences that we can act at the appropriate time with greater certitude, for this should be the general goal of the study and occupation of all men who make use of their mind.

The third thing, finally, is that probabilities need not be utterly despised, because several probabilities joined together generally can produce as much conviction as can very clear demonstrations. An infinity of examples of this are found in physics and morals; accordingly, it is often appropriate to combine a sufficient number of them for matters that cannot otherwise be demonstrated in order to find the truth, which it would be impossible to discover in any other way.

I must here again declare that the law I impose is quite strict; that an infinity of people will prefer never to reason than to reason under these conditions; that not a great deal of ground will be covered with such inconvenient circumspection. But it must also be granted that, while following it, we shall tread securely, and that until now we have been obliged to retrace our steps for having progressed too quickly. A great number of people will even agree with me that in thirty years Descartes discovered more truths than all other philosophers because he recognized this law; if more people had philosophized as he did, we could eventually know the greater part of what is necessary for living happily, insofar as we are able on an earth that God has cursed.

BOOK ONE: THE SENSES
Chapter Four

I. The occasional causes of error; that there are five principal ones. II. A general plan of the whole work, and a specific plan of the first book.

We have just seen that we fall into error only because we do not use our freedom as we should, that we err for failure to regulate the eagerness and ardor of the will for the mere appearances of truth, and that error consists only in consent of the will when extended beyond the perception of the understanding, because we would not err at all were we to judge only about what we perceive.

I. The occasional causes of error; that there are five principal ones.

Although, properly speaking, only the misuse of freedom is the cause of error, it can nevertheless be said that we have many faculties that are causes of our errors—not real causes, but causes that might be called *occasional*. All our ways of perceiving are to us so many occasions of error, for since our false judgments include two things, the consent of the will and the perception of the understanding, it is quite clear that each of the ways in which we perceive can provide us with an occasion for error, since they can lead us to precipitous consent.

But because the mind must first be made aware of its weaknesses and aberrations in order to acquire the proper desire to deliver itself from them and more easily discard its prejudices, we shall try to give a precise division of the ways it perceives, which will be the headings under which the different errors to which we are subject will be grouped in what follows.

The soul can perceive things in three ways, by the *pure understanding*, by the *imagination*, and by the *senses*.

By the *pure understanding* it perceives spiritual things, universals, common notions, the ideas of perfection and of an infinitely perfect being, and generally all its thoughts when it knows them through self-reflection. By the pure understanding it even perceives material things, extension with its properties; for only pure understanding can perceive a perfect circle, a perfect square, a figure of a thousand sides, and similar things. These sorts of perceptions are called *pure* *intellections*, or *pure perceptions*, because the mind need not form corporeal images in the brain to represent all these things.

Through the *imagination* the soul perceives only material beings, making them present when in fact they are absent, by forming images of them, as it were, in the brain. It is in this way that we imagine all sorts of figures: a circle, a triangle, a face, a horse, cities, and the countryside, whether we have already seen them or not. These sorts of perceptions might be called *imaginations*, because the soul represents these objects to itself by forming images of them in the brain; and, since images of spiritual things cannot be formed, it follows that the soul cannot imagine them (and this should be noted well).

Finally the soul perceives by the *senses* only sensible and gross objects, either when, being present, they make an impression on the external organs of its body and this impression is communicated to the brain or, when in their absence, the flow of animal spirits makes a similar impression in the brain. In this way the soul sees plains and rocks before its eyes, knows the hardness of iron, the point of a sword, and similar things; and these sorts of perceptions are called *feelings* [*sentimens*] or *sensations* [*sensations*].

The soul, then, perceives only in these three ways, which can easily be seen if it be considered that the things we perceive are either spiritual or material. If they are spiritual, only the pure understanding can know them. But if they are material, they will be either present or absent. If they are absent, the soul ordinarily represents them to itself only through the imagination; but if they are present, the soul can perceive them through the impressions they make on its senses. Thus our souls perceive things in only three ways, by the *pure understanding*, by the *imagination*, and by the *senses*.

These three faculties, then, can be considered as reliable headings under which men's errors and the causes of these errors might be grouped, and thus we can avoid the confusion into which their great number would inevitably plunge us were we to speak of them without ordering them.

But our *inclinations* and *passions* also act very strongly on us; they dazzle our mind with false lights, cover it, and fill it with shadows. Our inclinations and passions involve us in an infinite number of errors when we follow this false and deceptive light they produce in us. They must be considered, then, along with the three faculties of the mind, as sources of our aberrations and errors; and the errors attributable to the passions and inclinations must be added to those of the senses, the imagination, and the pure understanding. Thus, all the errors of men and their causes can be grouped under five headings, and they will be treated according to this classification.

II. General plan of the whole work.

First, the *errors of the senses* will be discussed; Second, the *errors of the imagination*; third, the *errors of the pure understanding*; fourth, the *errors of the inclinations*; fifth, the *errors of the passions*. Finally, after having tried to relieve the mind of the errors to which it is subject, we shall give a *general method* for conducting the search after truth.

III. The specific plan of the first book.

We are going to begin by explaining the errors of our senses, or rather the errors into which we fall by not using our senses in the way we should; and we shall deal not so much with particular errors, which are almost infinite, as with the general cause of these errors and the things we take to be necessary for knowing the nature of the human mind.

BOOK ONE: THE SENSES
Chapter Five

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The senses. I. Two ways of explaining how our senses are corrupted by sin. II. That it is not our senses, but our freedom that is the real cause of our errors. III. A rule for avoiding error in the use of our senses.

When we carefully consider man's senses and passions, we find them to be so well suited to the end for which they are given us that we cannot agree with those who say that they are entirely corrupted by Original Sin. But in order to ascertain whether our disagreement with them is correct, we need to explain how we might conceive of the order found in the faculties and passions of our first father in his original state, as well as the changes and disorders that befell him after his sin. These matters can be conceived in two ways; here is the first.

I. Two ways of explaining the corruption of the senses by sin.

It seems to be a common notion that for things to be well ordered, the soul should feel pleasure in proportion to the amount of good it enjoys. Pleasure is a natural instinct, or, to speak more clearly, an impression from God Himself directing us toward some good, which impression must be proportionately stronger as the good is greater. According to this principle, it seems that as he was created before his sin, our first father undoubtedly found no more pleasure in the most concrete goods than in others. Since God had created him that he might love Him, and since God was his true good, we can therefore say that God made Himself pleasing to him, that He brought him to His love by a sensation of pleasure, and that, counterbalancing the greatest sensuous pleasures, He gave him interior satisfaction in his duty, which men no longer experience after Original Sin without some special grace.

Nevertheless, as he had a body that God willed he should preserve, and which he regarded as part of himself, God must also have made him experience pleasures through the senses like those we enjoy in the use of things conducive to the preservation of life.

We do not presume to decide whether before his fall the first man was able to avoid having agreeable or disagreeable sensations when the principal part of his brain was set in motion by the use of sensible things. Perhaps he had this power over himself due to his submission to God, though the contrary seems more probable. For although Adam might have been able to arrest the agitation in the spirits and blood, as well as disturbances in the brain that objects aroused in him (because his body, being in order, was necessarily dominated by his mind), nonetheless it is unlikely that he could have avoided having sensations of objects as long as he had not arrested the motion they produced in the part of his body to which the soul is immediately joined. For the union of soul and body, which consists primarily of a mutual relation between sensations and motion in the organs, would seem to be more arbitrary than natural had Adam been able to sense nothing when the main part of his body received some impression from the bodies surrounding him. Nevertheless, I shall opt for neither of these views.

The first man, then, experienced pleasure in what improved his body, just as he sensed pleasure in what improved his soul; and because he was in a perfect state, he found that of the soul much greater than that of the body. Thus it was infinitely easier for him to preserve his righteousness than it is for us to do so without the grace of Jesus Christ, since without it, we no longer find pleasure in our duty. Yet he unfortunately let himself be seduced, and he lost this righteousness through his disobedience.[a] Thus, the main change he underwent, which produced all the disorder of the senses and passions, was that, as a just punishment, God withdrew from him and no longer willed to be his good, or rather no longer made him feel the pleasure that indicated that He was his good. As a result, the sensible pleasures, which lead only to the goods of the body, were left isolated, no longer counterbalanced by those that heretofore had led him to his true good. The close union he had with God was extremely weakened, and that with his body was greatly increased. Being dominant, sensible pleasure corrupted his heart by attaching it to all sensible objects; and the corruption of his heart darkened his mind by leading it away from the light that had illumined it, and by leading him to judge things only according to the relations they might have to his body.

But at bottom, the change cannot be said to have been very great on the side of the senses. For just as when I have removed one of two balanced weights the other immediately tips the scale to its side without being changed or increased, so after the Fall sensible pleasures lowered the soul toward sensible things because there were lacking those inner *delights* that before the Fall counterbalanced our inclination for the good of the body—but, again, without so great a change on the part of the senses as is commonly supposed.

The second explanation, which seems to me the true one. Here is the second way of explaining the disorders due to sin, which is certainly more reasonable than the one we have just discussed. It is quite different because its principle is different; but yet these two ways are in perfect agreement as far as the senses are concerned.

Being composed of a mind and a body, we have two kinds of goods to look for, those of the mind and those of the body. We also have two ways of recognizing a thing to be good or bad: by employing the mind alone, or by employing the mind in conjunction with the body. We can recognize our good through clear and evident knowledge; we can also recognize it through confused sensation. I realize through reason that justice ought to be esteemed; I also know through the sense of taste that a given fruit is good. The beauty of justice is not sensed; the goodness of fruit is not known. The goods of the body do not deserve the attention of a mind, which God made only for Him. The mind, then, must recognize this sort of good without examination, and by the quick and indubitable proof of sensation. Stones do not provide nourishment; the proof of this is convincing, and taste alone produces universal agreement.

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[a] St. Gregory *Hom. on the Gospels* 39.

I grant, then, that pleasure and pain are the natural and indubitable characteristics of good and evil: but (1) this holds only for those things that, being neither good nor bad by themselves, cannot also be recognized as such through clear and evident knowledge; and (2) this holds only for those things that, being below the mind, can neither reward nor punish it; finally, (3) this holds only for those things that do not merit the mind's attention, and since God does not will that we attend to them, He leads us to these things only by *instinct*, i.e., by pleasant or unpleasant sensations.

But God—who alone is the true good of the mind, who alone is above it, who alone can reward it in a thousand different ways, who alone is worthy of its attention, and who has no fear that those who know Him will not find Him worthy of esteem—He is not content to be loved with a blind and *instinctive* love; He wishes to be loved with an enlightened love, with a love through *choice*.

If the mind saw in bodies only what is really in them, without being aware of what is not in them, it would neither love objects nor make use of them without great pain; thus it is necessary, as it were, that objects should appear to be pleasant by producing sensations they themselves lack. The same is not true of God. One has only to see Him as He is to be brought to love Him, and He need not avail Himself of the instinct of pleasure as a kind of strategem to attract our love without deserving it.

This being so, Adam cannot be said to have been brought to love of God and to his duty by a prevenient pleasure,[a] because his knowledge of God, like that of his good, and the joy he unceasingly felt as a necessary result of the perception of his happiness in being united to God could have sufficed to attract him to his duty and to make him act more meritoriously than if he had been determined, as it were, by some prevenient pleasure. Thus he was fully free. And it is in this state perhaps that Sacred Scripture would have represented him to us with the words: "God made man from the beginning, and having given him His commandments, left him to himself,"[b] that is, without determining him by the enjoyment of some prevenient pleasure, but by keeping him drawn to Him through the clear perception of his good and duty. But to the shame of free will and to the glory of God alone, experience has revealed the weakness that Adam was capable of even in so ordered and happy a state as was his before his sin.

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[a] See the *Elucidations* [4].

[b] "Deus ab initio constituit hominem & reliquit illum in manu consilii sui, adjecit mandata & praecepta sua, &c." Eccl. 15:14.

But Adam cannot be said to have been led to seeking out and using sensible things through exact knowledge of the relation they might have had to his body. For in the final analysis, had it been necessary for him to examine the configurations of the parts of some fruit, then those of the parts of his body, and then the resultant relation between them, in order to judge whether, with the present temperature of his blood and the thousand other dispositions of his body, the fruit was nourishing, then clearly things unworthy of its attention would have exhausted his mind's capacity; to do so would have even been useless enough, because he would not have preserved himself for long by this means alone.

Given, then, that Adam's mind was not infinite, no fault will be found in our saying that he did not know all the properties of the bodies surrounding him, since it is certain that these properties are infinite. And if what is undeniable be agreed, that his mind was not made for examining the motion and configurations of matter but to be continually applied to God, we shall not be found amiss in claiming that it would have been a disorder or an irregularity in a time when everything was necessarily perfectly ordered if he had been obliged to turn his mind from the contemplation of the perfections of his true good in order to examine the nature of some fruit with regard to its nutritive value.

Adam, then, had the same senses as we do, by which he was advised of what was necessary for his body, but without being distracted from God. Like us, he sensed pleasures and even pains, or involuntary and prevenient displeasure. But these pleasures and pains could neither enslave him nor make him unhappy, as they do us, because as absolute master of the motions generated in his body, he stopped them, if he so wished, as soon as they had performed their advisory function (and no doubt he always wished to do so with regard to pain). Happy would he, and we, have been had he done the same thing with regard to pleasure, and had he not voluntarily turned himself away from the presence of his God by allowing his mind's capacity to be exhausted by the beauty and anticipated sweetness of the forbidden fruit, or perhaps by the rash joy excited in his soul by the contemplation of his natural perfections, or finally by his natural fondness for his wife and the inordinate fear of displeasing her, all of which apparently contributed to his disobedience.

But after he had sinned, the pleasures that had served only to advise him respectfully, and the pains that, without disturbing his felicity served only to inform him that he might lose it and become unhappy, no longer had the same significance for him. His senses and passions revolted against him; they no longer obeyed his orders, and they enslaved him, as they do us, to sensible things.

Thus, not the senses and passions themselves were generated by sin, but rather only their power of victimizing sinners; and this power is not so much a disorder on the part of the senses as on the part of the mind and will of men, who, having lost the power they had over their bodies, and no longer being so closely united to God, no longer receive from Him that enlightenment and strength by means of which they had preserved their freedom and happiness.

Incidentally, we must conclude from these two ways of explaining the disorders of sin that two things are needed to restore us to order.[a]

First, the weight that burdens us and inclines us toward sensible goods must be cast off by continually avoiding pleasures, by mortifying the sensitivity of our senses through penances, and by circumcision of the heart.

Second, we must ask God for the weight of his grace and for that *prevenient delight*[b] which Jesus Christ has individually merited for us and without which the weight that inclines us toward sensible goods will always, however we might struggle, be a burden and, however light it might be, will inevitably lead us into sin and disorder.

These two things are absolutely necessary to restore us to, and preserve us in, our duty. As can be seen, reason is in perfect agreement with the gospel—both teach us that privation, self-denial, and the diminution of the influence of sin are necessary preparations in order that the influence of God's grace should rectify our situation and unite us with Him.

But though we have in our present state an obligation to struggle continually against our senses, it should not be concluded from this that the senses are altogether corrupted and disordered. For if it be considered that they are given us for the preservation of our body, it will be seen that they fulfill their purpose perfectly well, and that they conduct us in so faithful and appropriate a fashion to their end that it seems wrong to accuse them of being corrupt and disordered. Through pleasure and pain, through agreeable and disagreeable tastes, and by other sensations, they so quickly advise the soul of what ought and ought not to be done for the preservation of life that it cannot correctly be maintained that this order and precision are a consequence of sin.

II. It is not our senses, but the improper use of our freedom that plunges us into error.

Our senses, then, are not as corrupt as might be imagined; rather, it is the most inward part of our soul, our freedom, that has been corrupted. We are deceived not by our senses but by our will, through its precipitous judgments. When, for example, we see light, it is quite certain that we see light; when we feel heat, we are not mistaken in believing that we feel heat, whether before or after the fall. But we are mistaken in judging that the heat we feel is outside the soul that feels it, as we shall explain in the following.

The senses, then, would not plunge us into error if we used our freedom properly and if we did not rely on their reports in order to judge matters too precipitously. But because it is very difficult to avoid this, and because we are almost forced into it due to the close union between our body and soul, I shall indicate the way we ought to use them in order to avoid falling into error.

[a] Remedy for the disorder in the world caused by Original Sin, and the foundation of Christian morality.

[b] See the *Elucidations* [5].

III. A rule for avoiding error in the employment of the senses.

We must follow this rule exactly. *Never judge by means of the senses as to what things are in themselves, but only as to the relation they have to the body* because, in fact, the senses were given to us, not to know the truth of things in themselves, but only for the preservation of our body.

But in order to make a clean breast of the natural inclination toward following the senses in the search after truth, we shall in the following chapters deduce the chief and most general errors into which they plunge us, and then the truth of what has just been claimed will be clearly recognized.

BOOK ONE: THE SENSES
Chapter Six

⁂

I. The errors of vision with regard to absolute extension [*étendue en soi*]. *II. The consequence of these errors with regard to invisible objects. III. The errors of vision with regard to relative extension* [*étendue considérée par rapport*].

Of all the senses, vision is the first, the most noble, the most extensive; accordingly, if they were given to us for discovering truth, it would have a greater role by itself than all the others combined. Thus, in order to set ourselves aright and to bring ourselves to a general distrust of all the senses, it will suffice to overthrow the authority our eyes have over our reason.

We shall make it clear, then, (1) that we should rely on the testimony of sight not in order to judge concerning the truth of things in themselves but only to discover the relation they have to the preservation of the body; (2) that our eyes generally deceive us in everything they represent to us: in the size of bodies, in their figure and motion, and in light and colors, which are the only things we see; (3) that all these things are not as they appear to us, that everyone errs regarding them, and that as a result we are plunged into an infinite number of other errors. We begin with extension; the following are the arguments that lead us to believe that our eyes never make us see it just as it is.

I. The errors of vision with regard to absolute extension.

With magnifying glasses, we can easily see animals much smaller than an almost invisible grain of sand;[a] we have seen some even a thousand times smaller. These living atoms walk as well as other animals. Thus, they have legs and feet, and bones in their legs to support them (or rather on their legs, for the skin of an insect is its skeleton). They have muscles to move them, as well as tendons and an infinity of fibers in each muscle; finally, they have blood or very subtle and delicate animal spirits to fill or move these muscles in succession. Without this, it is impossible to conceive how they should live, nourish themselves, and move their tiny bodies from place to place according to the various

[a] *Journal des Sçavans,* 12 Nov. 1668.

impressions of objects—or rather, it is impossible for those who have spent their whole lives in anatomy and the study of nature to imagine the number, diversity, and delicacy of all the parts of which these little bodies are necessarily composed in order to live and carry out the things we see them do.

The imagination boggles at the sight of such an extreme smallness. It can neither arrive at nor grasp these parts that have no handle for it, and although reason convinces us of what has just been said, the senses and the imagination oppose it and often make us doubt it.

Our vision is very limited; but it must not limit its object. The idea it gives us of extension has very narrow limits; but it does not follow from this that extension is so limited. Undoubtedly, it is in a sense unlimited; and this small section of matter, which is hidden from our eyes, can contain an entire world in which would be found as many things, though proportionately smaller, as are found in this larger world we live in.

For the tiny animals of which we have just spoken, there are perhaps other animals that prey upon them and that, on account of their awesome smallness, are to them as imperceptible as they themselves are to us. What a mite is compared with us, these animals are to a mite; and perhaps there are in nature things smaller and smaller to infinity, standing in that extreme proportion of man to mite.

We have clear mathematical demonstrations of the infinite divisibility of matter, and although our imagination is shocked at the thought, this leads us to believe that there might be smaller and smaller animals to infinity. God made matter only to fashion His wonderful creation from it, and since we are certain that there is nothing whose smallness could limit His power of forming these tiny animals, why limit it and thus diminish without reason the idea we have of an infinite craftsman by measuring his power and skill with our finite imagination?

Experimentation has already partially rectified our errors by enabling us to see animals a thousand times smaller than a mite—why would we have them be the last and smallest of all? For my part, I see no reason to imagine it so. On the contrary, it is much more plausible to believe that there are many things yet smaller than those already discovered, for in the final analysis, there are always tiny animals to be found with microscopes, but not always microscopes to find them.

When one examines the seed of a tulip bulb in the dead of winter with a simple *magnifying lens* or convex glass, or even merely with the naked eye, one easily discovers in this seed the leaves that are to become green, those that are to make up the flower or tulip, that tiny triangular part which contains the seed, and the six little columns that surround it at the base of the flower. Thus it cannot be doubted that the seed of a tulip bulb contains an entire tulip.

It is reasonable to believe the same thing of a mustard seed, an apple seed, and generally of the seeds of every sort of tree and plant, though all this might not be seen with the naked eye or even with a microscope; and it can be said with some assurance that all trees are in the seeds of their seeds in miniature.

Nor does it seem unreasonable to believe even that there is an infinite number of trees in a single seed, since it contains not only the tree of which it is the seed but also a great number of other seeds that might contain other trees and other seeds, which will perhaps have on an incomprehensibly small scale other trees and other seeds and so to infinity. So that according to this view, which will appear strange and incongruous only to those who measure the marvels of God's infinite power by the ideas of sense and imagination, it might be said (1) that in a single apple seed there are apple trees, apples, and apple seeds, standing in the proportion of a fully grown tree to the tree in its seed, for an infinite, or nearly infinite number of centuries; (2) that nature's role is only to unfold these tiny trees by providing perceptible growth for that outside its seed, and imperceptible yet very real growth in proportion to their size, for those thought to be in their seed—for it cannot be doubted that there are bodies sufficiently small to get in between the fibers of these trees thought to be in their seed and thus to serve as food for them.

What we have just said about plants and their seeds can be said also of animals and the seeds from which they are produced. An entire tulip is seen in the seed of a tulip bulb. Likewise, a chicken that is perhaps entirely formed is seen in the seed of a fresh egg that has not been hatched.[a] Frogs are to be seen in frogs' eggs, and still other animals will be seen in their seed when we have sufficient skill and experience to discover them.[b] But the mind need not stop with the eyes, for the mind's vision is much more extensive that the body's. We ought to accept, in addition, that the body of every man and beast born till the end of time was perhaps produced at the creation of the world. My thought is that the females of the original animals may have been created along with all those of the same species that they have begotten and that are to be begotten in the future.

This thought might be developed and might get at the truth, but we are justly apprehensive about wanting to enter too deeply into the works of God. In these works, nothing but infinities are found everywhere; and not only are our senses and imagination too limited to comprehend them, but even the mind, as pure and detached from matter as it is, is too coarse and feeble to penetrate the smallest of God's works. It loses itself, is distracted and dazzled, and is afraid at the sight of what according to the language of the senses is called an atom. But the pure mind always has this advantage over the senses and the imagination, that it recognizes its weakness and the greatness of God, and is conscious of the infinity in which it is lost; our senses and imagination, meanwhile, would depreciate God's works and inspire us with a foolish confidence that casts us blindly into error. Our eyes furnish us with none of the ideas of these things that we discover with microscopes or by reason. Through sight we perceive nothing smaller than a mite. Half a mite is nothing if we accept the testimony of vision. As far as vision is concerned, a mite is only a mathematical point. It cannot be divided without being annihilated. Our sight, then, does not represent extension to us as it is in itself, but only as it is in relation to our body; and because half a mite has no significant relation to our body, and can neither preserve nor destroy it, our sight hides it from us entirely.

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[a] The germ of the egg is under a tiny white spot that is on the yolk. See the *Liv. de formatione pulli in ovo*, by Malpighi.

[b] See the *Miraculum naturae*, by Swammerdam.

But if we had eyes constructed like microscopes, or rather, if we were as small as mites, our judgments about the size of bodies would be quite different. For these tiny animals undoubtedly have eyes that can see both what surrounds them and their own body as though much larger, or as composed of a greater number of parts, than we see it, since otherwise they would not receive the impressions necessary for the preservation of their life, and thus the eyes they do have would be entirely useless to them.

But to reassure ourselves about all this, we must realize (1) that our own eyes are in effect only natural spectacles; (2) that their humors have the same effect as the lenses in spectacles; (3) that depending on the distance between them, the shape of the *crystalline lens*, and its distance from the *retina*,[a] we see objects differently. As a result of this, we cannot be certain that there are two men in the world who see objects as having precisely the same size, or as being composed of the same number of parts, since we cannot be certain that their eyes are altogether alike.

All men see objects as having the same size in the sense that they see them as described by the same limits or by equal angles. For they see their edges as straight lines making up a visual angle that is perceptually equal when the objects are seen from an equal distance. But it is not certain that the ideas they have of the size of a given object are equal, because the means they have for judging distance, upon which the size of the idea depends, are not equal. Furthermore, those whose optical nerve fibers are smaller and more delicate are able to notice many more parts in an object than those whose nerve is of a coarser tissue.

Nothing would be easier than a geometrical demonstration of these matters;[b] and if they were not already so well known, we would first stop to prove them. But because several people have already treated of these matters, those who wish to be instructed in them are asked to consult their works.

Since it is not certain that there are two men who view the same object as having the same size, and since sometimes even the same man sees things larger with the left eye than with the right,[c] according to observations reported in the *Giornale de' letterati*, January 1669, it is clear that we must not rely on the testimony of our eyes to make judgments about size. It would be better to listen to reason, which proves to us that we do not know how to determine the absolute size of the bodies surrounding us, or what idea we ought to have of a square foot, or of our own body such that the idea would represent it to us as it is. For reason teaches us that the smallest of all objects would not be small by itself, since it is composed of an infinite number of parts from each one of which God could fashion an earth that would be but a point in comparison to the others taken together. Thus the mind of man is incapable of framing an idea sufficiently great to encompass and comprehend the least extension in the world, since the mind is limited whereas the idea must be infinite.

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[a] This is the optic nerve.

[b] See Descartes's *Dioptrics*.

[c] One of my friends always sees the letters of a book larger with the right eye than with the left.

It is true that the mind can more or less know the relations found among these infinities of which the world is composed, that, for example, one is twice the other, and that a fathom consists of six feet; but nonetheless, it cannot frame for itself an idea representing what these things are in themselves.

Yet I am willing to suppose that the mind is capable of ideas that match or approximate the extension of the bodies we see, for it is difficult enough to persuade men of the contrary. Let us examine, then, what can be concluded from this supposition. It will undoubtedly be concluded that God does not deceive us, that He has not given us eyes like glasses that magnify and diminish objects, and that we must therefore agree that our eyes represent things to us as they are.

It is true that God never deceives us, but we often deceive ourselves by judging things too hastily. For we often judge that the objects of which we have ideas exist, and even that they are altogether like these ideas. But it often turns out that these objects are not at all like our ideas, and even that they do not exist.

From the fact that we have an idea of a thing, it does not follow that the thing exists and still less that it is entirely like our idea of it. From the fact that God provides us with a given sensible idea of size, as when a fathom ruler is before our eyes, it does not follow that the ruler has only that extension represented to us by the idea. For in the first place, not all men have precisely the same sensible idea of the ruler, since not all men's eyes are disposed in the same way. Second, a given person sometimes does not have the same sensible idea of a fathom ruler when he views it with the right eye and then the left, as has already been said. Finally, it often happens that the same person has different ideas of the same objects at different times, according to whether he believes them to be more or less at a distance, as we shall explain elsewhere.

Thus it is a groundless prejudice to believe that we see objects as they are in themselves. For our eyes, which were given us only for the preservation of our body, perform their duty quite well by providing us with ideas of objects proportioned to the idea we have of the size of our body, although there are in these objects an infinite number of parts that they do not disclose to us.

But to understand better what we should judge concerning the extension of bodies on the basis of the testimony of our eyes, let us imagine that from a quantity of matter the volume of a ball God has made a miniature earth and sky, and men upon this earth having the same proportions observed in the larger world. These tiny men would see one another, the parts of their bodies, and even the little animals that might bother them, for otherwise their eyes would be useless for their preservation. It is obvious on this supposition, then, that these tiny men would have ideas of the size of objects quite different from ours, since they would regard their world, which is but a ball to us, as having infinite space, more or less as we judge the world we are in.

Or, if it is easier to conceive, suppose that God created an earth infinitely more vast than the one we inhabit, such that this other earth would stand to ours as ours stood to the one we were just speaking about in the preceding supposition. In addition to this, let us suppose that God preserved among all the parts composing this other world the same proportion as among the parts composing ours. It is clear that the men of this other world would be larger than the space between our earth and the most distant star we see; this being so, it can be seen that if they had the same ideas of the extension of bodies as we have, they would be unable to discern certain parts of their own body, while they would see certain others as having an enormous bulk. As a result, it is ridiculous to suppose that they see things as having the same size as we see them.

It is obvious from these two suppositions we have just made that the men of the larger or smaller world would have ideas of the size of bodies quite different from our own, given that their eyes provide them with ideas of the objects surrounding them proportionate to the size of their own bodies. But if these men relied heavily on the testimony of their eyes that objects are such as they see them, it is clear that they would be mistaken; nobody can doubt this. Nonetheless, these men would certainly have as much reason as we to defend their opinion. Let us learn, then, by their example that we are quite uncertain as to the true size of the bodies we see, and that all we can know of size through sight is the relation between theirs and ours, a relation by no means exact—in a word, that our eyes were not given us to judge the truth of things, but only to let us know which things might inconvenience us or be of some use to us.

[*II. Continuation of the errors of sight with regard to things not under its jurisdiction* <This title found in first edition only>.]

Men, however, trust their eyes in judging not only about visible objects but also about objects that are invisible. As soon as they do not see certain things, they conclude that they do not exist, thus attributing to sight powers of penetration to some extent infinite. This is what prevents them from recognizing the true causes of an infinity of natural effects; for if they relate these effects to imaginary qualities and faculties, it is often because they do not see the real ones, which are a matter of the different configurations of these bodies.

For example, they do not see the particles of air and of flame, still less those of light or of other matter yet more subtle, and this leads them to believe that they do not exist or to judge that they are inert. They fall back on occult qualities or imaginary faculties to explain all the effects of which these imperceptible particles are the natural cause.

To explain the elevation of water in pumps, they prefer to resort to the horror of the void, rather than to the weight of air. They resort to qualities of the moon, rather than to the pressure of the air surrounding the earth in order to explain the tides, and to forces of *attraction* in the sun, rather than to the impulses caused by the particles of subtle matter it continuously diffuses, in order to explain the rising of vapors.

They consider it incongruous that the movement of animals as well as the habits and corporeal memory of men can be explained through appeal to blood and flesh alone. This derives in part from their conception of the brain as very small and consequently as incapable of preserving the traces of the almost infinite number of things found there. They prefer to recognize, without understanding it, a soul in beasts that would be neither mind nor body, as well as qualities and intentional species for the memory and habits of men, or other such things of which they have no specific notion at all in mind.

It would take too long to enumerate the errors into which this prejudice leads us; there are very few errors in physics that it has not occasioned, and the results of some serious thought on this matter would perhaps be astonishing.

Although we do not wish to delay too long over these matters, we can hardly ignore the disdain men ordinarily have for insects and other tiny animals produced from matter they call corrupt. The disdain is inappropriate and is founded only on ignorance of the thing they disdain as well as on the prejudice just mentioned. Nothing in nature is despicable, and all the works of God deserve to be respected and admired, especially if one notices the simplicity of the ways in which God makes and preserves them. The tiniest gnats are as perfect as the largest of animals. The proportion of their members is as correct as that of other animals, and it even seems as though God has willed to bejewel them in compensation for their lack of size. They have crowns, plumes, and other attire upon their heads against which anything invented by the riches of men must pale; and I can assert with confidence that those who have used only their eyes have never seen anything so beautiful, so fitting, or even so magnificent in the houses of the greatest princes as what can be seen with magnifying glasses on the head of a simple fly. Man, for example, has only one crystalline lens in each eye, the fly has more than a thousand—but arranged with a marvelous order and precision.

It is true that these things are quite small, but this makes it even more surprising that so much beauty is found concentrated in so small a space; although they are quite common, these animals are nonetheless remarkable, and they are no less perfect in themselves—rather, on their account God appears more admirable, God who in producing them in such numbers and with so much magnificence performed an almost infinite number of miracles.

Yet vision hides all these beautiful things from us; it makes us scorn these works of God so worthy of our admiration; and because these animals are small in relation to our bodies, we are led to view them as absolutely small, and consequently as despicable because of their smallness, as if bodies could be small in themselves.

Let us try, then, not to follow sense impressions in judgments we make about the size of bodies; and when we say, for example, that a bird is small, let us not understand this absolutely, for nothing is either large or small in itself. Even a bird is large in relation to a fly, and if it is small in relation to our bodies, it does not follow that it is so absolutely, since the body is not an absolute standard against which one should measure other things. The body is itself quite small in relation to the earth, and the earth quite small in relation to the circle that the sun or the earth describes about the other, and this circle in relation to the space between us and the fixed stars, and so on, for we can always imagine greater and greater spaces to infinity.

III. The error of our eyes concerning the extension of bodies in relation to each other.

It must not be imagined, however, that our senses correctly inform us of the relation that other bodies have to our own, for exactitude and precision are not essential to sense knowledge, which need serve only for the preservation of life. It is true that we know with sufficient precision the relation that bodies close to us have to our own body, but the further they are from us the less we know them, because they then have less of a relation to our body. The idea or sensation of size we have upon viewing some object diminishes as that object is less in a position to harm us, and the idea or sensation increases as the object approaches us, or rather as its relation to our body increases. Finally, if this relation ceases altogether, that is, if an object is so small or so distant from us that it cannot harm us, we no longer have any sensation of it at all. As a result, we can sometimes judge through sight the approximate relation bodies have to our own as well as among themselves; but we must never believe that they have the size they seem to us to have.

Our eyes represent the sun and the moon, for example, as having a diameter of a foot or two, but we must not imagine, as did Epicurus and Lucretius, that they are really of this size. According to our perception of it, the same moon appears to us much larger than the largest of stars, yet no one doubts that it is incomparably smaller. We likewise see daily on the earth two or more things whose size or relation we are unable to determine precisely, because in order to judge their size, their exact distance must be known, and this is very difficult to determine.

We can hardly even judge with any certainty about the relation between two bodies quite close to us; they must be picked up and held against each other for a comparison, and even then we often hesitate, being sure of nothing. This can be clearly seen in examining the size of coins that are almost equal; here we must place them on top of each other to see with assurance whether they correspond in size. If a line is drawn on paper and another is drawn at its end perpendicular and equal to it, they will appear roughly equal. But if the perpendicular is drawn at its middle, the perpendicular will appear perceptibly longer, and the closer to the middle it is drawn the longer it will appear. The same experiment can be performed with two straws, so that to know if they are equal, or which is longer, they must be laid one upon the other, as is ordinarily done. Our eyes, therefore, deceive us not only with regard to the size of bodies in themselves but also with regard to the relation bodies have among themselves.

Note

Those who are ignorant of the eye's structure and the principles of its construction would do well to read the appendix found at the end of this work before reading this chapter.

BOOK ONE: THE SENSES
Chapter Seven

I. The errors of our eyes concerning figures. II. We have no knowledge of the smallest ones. III. That the knowledge we have of larger figures is inexact. IV. Explanation of certain natural judgments by which we avoid error. V. That even these judgments mislead us in certain instances.

I. The errors of sight concerning figures.

Our sight is less liable to mislead us when representing figures to us than when representing anything else, because figure in itself is nothing absolute, and because its nature consists in the relation between the limits of some space and a given straight line, or a point conceived of as in that space, which might be termed, as in the case of a circle, the center of that figure. Nevertheless, we are mistaken in a thousand ways about figures, and we never know any of them with complete precision through the senses.

II. That we have no knowledge of the smallest figures.

We have just proved that our sight does not reveal to us every sort of extension but only that which has some significant relation to our body, and that for this reason, we do not see each part of the smallest animals nor those parts that make up both solid and liquid bodies. Thus, unable to perceive these parts on account of their size, we consequently cannot perceive their figures, since the figure of a body is but its limiting boundary. Here we already have an almost infinite number of figures, the greatest part of which remain unnoticed by our eyes, which even lead the mind, relying too much on their capacity and not investigating things carefully enough, to believe that these figures do not exist.

III. That the knowledge we have of larger figures is inexact.

We can approximate the figures of bodies proportioned to our vision, which are quite few in comparison with all the rest, but their figures cannot be known exactly through the senses. Through sight we cannot even ascertain whether a circle and a square, the simplest of figures, are not in fact an ellipse and a parallelogram, although these figures might be in our hands and very close to our eyes.

Furthermore, we cannot determine exactly whether a line is straight or not, especially if it is of some length—for that a ruler is required. But what am I saying? We do not know whether the ruler itself is as we suppose it ought to be, and we have no way of being entirely certain on the matter. Nevertheless, without knowledge of the line, we can never, as we all realize, have knowledge of any figure.

This is all that can be said in general about figures at hand and close to our eyes; but if they are at a distance from us, how much change shall we find in the projection they make on the fundus of our eyes? I do not wish to stop here to describe them; they can easily be learned from some book of optics, or by examining figures found in paintings. Since painters, in order to make them appear natural, are almost always forced to change them and to paint circles, for example, as ovals, we have a sure sign that the way we see non-painted objects is erroneous. But these errors are corrected by new sensations that ought to be regarded as a kind of natural judgment, and that can be called judgments of sense.

IV. Explanation of certain natural judgments by which we avoid error. I call them "natural" because they are given to us by the Author of Nature.

When we look at a cube, for example, it is certain that the sides of it that we see almost never project an image of equal size in the fundus of our eyes. This is so because the image of each of its sides that appears on the *retina*, or optic nerve, is very like a cube painted in perspective; and consequently the sensation we have of it ought to represent the faces of the cube to us as being unequal, since they are unequal in a cube in prespective. Nonetheless, we see them as equal, and we are not deceived.

Now it might be said that this happens by a kind of judgment we naturally make, to wit, that the faces of the cube, that are farthest away and that are viewed obliquely should not form images on the fundus of the eye as big as those formed by the faces that are closer. But as it is given to the senses only to sense and never, properly speaking, to judge, it is clear that this natural judgment is but a compound sensation that consequently can sometimes be mistaken. I call it compound because it depends on two or more impressions occurring in the eye at the same time. When I look at a man walking toward me, for example, it is certain that, as he approaches, the image or impression of his height traced in the fundus of my eyes continuously increases and is finally doubled as he moves from ten to five feet away. But because the impression of distance decreases in the same proportion as the other increases, I see him as always having the same size. Thus the sensation I have of the man always depends on two different impressions, not counting the change in the eyes' position and other matters of which I shall speak in the following.

Nevertheless, since what in us is but a sensation can be considered in relation to the Author of Nature who excites it in us as a kind of judgment, I speak of sensations as natural judgments, because this way of speaking makes sense of certain things, as can be seen here, toward the end of chapter nine, and in several other places.

V. That even these judgments mislead us in certain instances.

Although these judgments I speak of serve to correct our senses in a thousand different ways, and although without them we would almost always be deceived, they can still be occasions of error for us. If it happens, for example, that we see the top of a bell tower behind a high wall, or behind a mountain, it will appear to us rather near and small. If afterward we see it at the same distance, but with several fields and houses between us and it, it will undoubtedly appear larger and farther away, even though the projection of rays from the bell tower or the image of the bell tower formed at the fundus of the eye is exactly the same in both cases. Now it might be said that we see it larger due to a judgment we naturally make, to wit, that since there are so many fields between us and the bell tower, it must be farther away and hence larger.

But if, on the other hand, we see no fields between us and the tower, although we know by other means that there are many, and that the tower is quite distant (which is important), the tower appears very near and small, as I have just said. And it can be further stated that this occurs as a result of a kind of judgment natural to our soul, which sees the tower in this way because it judges the tower to be five or six hundred feet away. For our imagination ordinarily does not represent great distance between objects unless it is aided by the sight of other objects between them, beyond which it can imagine more objects.

This is why we see the moon much larger when it is rising or setting than when it is well above the horizon;[a] for when the moon is high, we see no objects between us and it whose size we might know in order to judge the size of the moon by comparison. But when it has just risen or is about to set, we see between us and it the countryside, whose approximate size we know, and thus we judge it to be farther away and as a result we see it larger.

It should be noted that when the moon has risen above our heads, although we might know for certain through reason that it is at a great distance, we cannot help but see it as quite near and small, because these natural judgments of vision occur in us, independently of us, and even in spite of us. Likewise, although we might know that the moon does not travel in a path of our choosing, nevertheless, if we look at it while running, we shall see it running along with us and in the same direction. The reason for this is that the moon's image (by image I always mean the impression the object makes at the fundus of the eye) does not perceptibly change place in the fundus of the eye, even though we are running; and this is so because of its great distance, as can easily be shown. Thus, aware that we are running, we must naturally judge that it runs along with us. But when we run while looking at objects near us, we naturally judge that they are stationary, i.e., we see them stationary, since their images do not change place at the fundus of our eyes, or increase proportionately to the motion we feel in ourselves. Now

[a] See chapter 9 near the end and my *Réponse à M. Régis* below [vol. 17(I):263–78].

these natural judgments, although quite useful, often involve us in error of some sort, by making us form free judgments in perfect agreement with them. For when we judge as we sense, we are always to some degree mistaken, though we are never mistaken in anything if we judge as we conceive, because the body informs only for the sake of the body, while God alone always teaches the truth, as I shall show elsewhere.

These natural judgments deceive us not only with regard to the size and distance of objects but also by making us see their figures other than as they are. We see the moon and the sun, for example, and other very distant spherical bodies as if they were flat and circular. This is because at that great distance we cannot distinguish whether the part near the center of [the visual face of] these bodies is closer to us than the others, and because of this we judge it to be at an equal distance. For the same reason we judge all the stars and the blue sky to be at roughly the same distance as their neighbors and in, as it were, a perfectly elliptical, convex vault, because our mind always supposes equality where it sees no inequality. But unless it is seen clearly, this equality should not be positively admitted.

Since instruction in these matters can be had from any book on optics, we shall not delay further with the errors of sight. The science of optics in fact teaches only how to deceive the eyes, and its technique consists only of finding ways of imposing on us at inappropriate moments those compound sensations or natural judgments of which I have just spoken. This can occur in so many different ways that of all the figures in the world, there is not a single one that cannot be represented in a thousand different ways. As a result, vision is invariably in error with regard to them. But this is not the place for a complete explanation of these matters. What has been said suffices to show that the eyes are not to be trusted when they represent to us the figure of bodies, though they are more faithful with regard to figures than with anything else.

BOOK ONE: THE SENSES
Chapter Eight

I. That our eyes do not inform us of the magnitude or speed of motion in itself. II. That duration, which is necessary for knowledge of motion, is unknown to us. III. An example of visual error concerning motion and rest.

We have already discovered the principal and most general errors of sight with regard to extension and figure; we must now correct those errors in which this same sense involves us concerning the motion of matter. After what has been said about extension, this will hardly be difficult, for there are so many connections between these two things that if we err with regard to the size of bodies, it is absolutely necessary that we also err with regard to their motion.

But in order to avoid anything that is not clear and distinct, an equivocation on the word motion must first be eliminated. Ordinarily, this term signifies two things: the first is a certain force imagined to be in the body moved and that is the cause of its motion; the second is the continual transport of a body approaching or receding from another object taken to be at rest.

When, for example, one ball is said to have communicated some of its motion to another, the word is taken in its first sense; but if we simply say that a ball is seen to have great motion, it is taken in the second. In short, this term *motion* signifies both the cause and the effect, which are nevertheless two quite different things.

There seem to abound very great and even dangerous errors concerning the force that produces motion and transports bodies. Those lovely terms *nature*, and *impressed* qualities, seem to be appropriate only for hiding the ignorance of counterfeit scholars and the impiety of freethinkers, as is easy to show. But this is not the place to discuss the force that moves bodies—it is not visible and I am speaking here only of the errors of the eyes. I postpone the issue till the proper occasion.[a]

Motion taken in the second sense, as the movement of one body away from another, is something visible and is the subject of this chapter.

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[a] See bk. 6, pt. 2. ch 3.

I. That our eyes do not inform us of the magnitude or speed of motion in itself.

It seems to me that I have demonstrated in the sixth chapter that sight never informs us of the size of bodies in themselves, but only of the relations they have with one another. From this I conclude that we are also unable to know the true or absolute magnitude of their motion, that is, of their swiftness or slowness, but only the relation these motions have to one another and especially to the motion that ordinarily occurs in our body. I shall prove this as follows.

It is certain that we would be unable to judge the magnitude of the motion of a body except by the distance it has passed through. Thus, since our eyes do not permit us to view the true distance passed through, it follows that they do not enable us to know the true magnitude of motion.

This proof is only a consequence of what I have already said concerning extension, and it is compelling only because it necessarily follows from what has already been demonstrated. But here is a proof that assumes nothing. Even if we could know clearly the true measure of the distance passed through, it would not follow that we could likewise know the true magnitude of the motion.

The magnitude or speed of motion includes two things. The first is the transport of a body from one place to another, as from Paris to St. Germain; the second is the time necessary for this transport. Now to know whether a man has traveled quickly or slowly it does not suffice to know the distance between Paris and St. Germain; besides this, the time spent in traveling must be known.

II. That duration, which is necessary for knowledge of the magnitude of motion, is unknown to us.

I agree, then, that the length of the road might be known truly, but I absolutely deny that through sight, or by any other means, one can know the exact time taken to travel the road, and the true magnitude of the duration.

This is sufficiently evident from the fact that at certain times one hour seems to us as long as four, and that at other times four hours fly by imperceptibly. When one is happy, for example, hours last but a moment, because then time passes without us thinking about it. But when one is overwhelmed with sadness or is suffering some pain, days last much longer. The reason for this is that at such a time the mind wearies of its duration as something irksome. The more the mind attends to it, the better it is noticed, and thus the mind finds it greater than periods of joy or agreeable occupation, which direct the mind outwardly, as it were, in order to grasp the object of its joy. So likewise does a person find some painting proportionately larger as he stops to consider more attentively all the things that it represents; or as we find the head of a fly to be quite large when all its parts are distinguished with a microscope. Thus the mind finds duration proportionately greater as it is carefully considered and all its parts perceived.

As a result, I have no doubt but that God could so direct our mind to the parts of duration by making us have a great number of sensations in a short time that a single hour would seem to us like several centuries. For ultimately duration has no instants as bodies have no atoms; and just as the smallest part of matter can be infinitely divided, infinitely smaller and smaller parts of duration can be given, as is easy to demonstrate. If the mind were made attentive to these small parts of duration through sensations that would leave traces in the brain it could remember, the mind would undoubtedly find it much longer than it appears.

But in any case, the use of watches is enough to show that we do not know duration exactly; and that is enough for me. For since the magnitude of motion in itself cannot be known unless, as we have shown, that of duration is known beforehand, it follows that if we cannot know the absolute magnitude of duration exactly, we likewise cannot know the absolute magnitude of motion exactly.

But because we can know some relations of duration, or relations of one time to another, we can also know some relations had by motions to one another. For as we can know that the solar year is longer than the lunar year, we can also know that a cannonball has more motion than a tortoise. Consequently, if our eyes do not enable us to see the absolute magnitude of motion, still they help us to know approximately its relative magnitude, i.e., the relation of one motion to another, and this alone is required to be known for the preservation of our body.

III. An example of visual error concerning the motion and rest of bodies.

In many instances it is clearly recognized that our sight deceives us concerning the motion of bodies. It happens often enough that things which appear to us to be moving have not in fact moved, and that things which appear to be at rest, on the other hand, are in motion. When, for example, one is seated aboard a quickly and steadily moving vessel, the land and towns are seen to recede. They appear to be in motion and the vessel seems to be at rest.

Similarly, if a man were placed on the planet Mars, he would judge through sight that the sun, the earth, and the other planets along with the fixed stars make their circumvolution in about 24 or 25 hours, which is the time taken by Mars in its axial rotation. Nonetheless, the earth, the sun, and the stars do not rotate about that planet, so that the man would see in motion things that are at rest, and he would think himself to be at rest, although he was in motion.

I shall not pause to explain how it is that the man aboard the vessel would easily correct the error of his eyes whereas the man on Mars would obstinately cling to his error. The reason for this is too easily known, and can be even more easily found if one reflects on what would happen to a man sleeping on a ship who awakes with a start and upon awakening sees only the top of the mast of an approaching ship. Given that he did not see the sails filled with wind, nor the sailors at work, and that he did not feel the agitation or the rocking of the ship, or some such thing, he would remain completely in doubt as to which of the two ships was moving, and neither his eyes nor even his own reason could disclose anything of help to him.

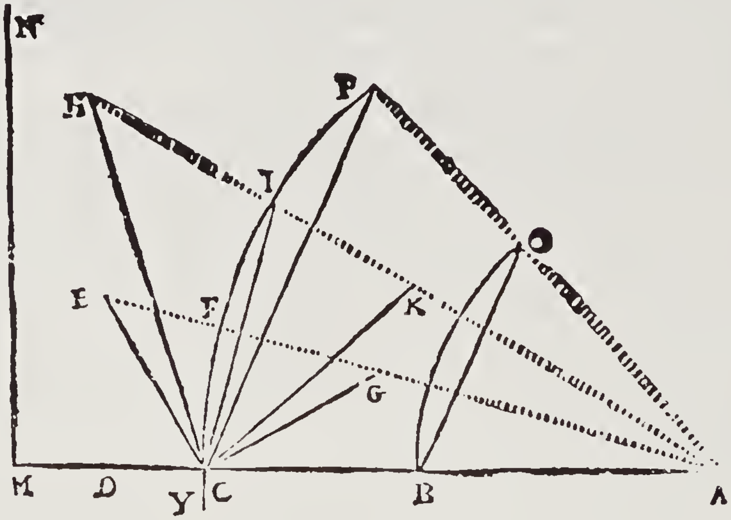
BOOK ONE: THE SENSES

Chapter Nine

Continuation of the same subject. I. A general proof of the errors of vision concerning motion. II. That the distance of objects must be known in order to judge the magnitude of their motion. III. An examination of the means of determining distances.

<*I. A general proof of the errors of vision concerning motion.*>

I. Here is a general proof of all errors into which sight leads us concerning motion.



Let A be the eye of the viewer, C the object, which I take to be at some distance from A. I claim: that although the object remains immobile at C, it may be thought to recede to D, or to approach B. That although the object recedes toward D, it may be thought to be at rest at C and even approach B, and that, on the other hand, although it approaches B, it may be thought to be at rest at C and even recede toward D. That although the object has advanced from C as far as E, or even H, G, or K, it may be thought to have moved only from C to F or I; and that on the other hand, though the object has moved from C to F or I, one might take it to have moved to E or H, or even G or K. That if the object moves in a line equally distant from the viewer, i.e., in a circumference whose center is the viewer, though this object moves from C to P, one may believe that it moves only from B to O, and on the other hand, though it move only from B to O, one might believe it to move from C to P.

If beyond the object C there is another object M, which is believed immobile but which moves toward N, then although the object C remains immobile, or moves much more slowly toward F than does M toward N, it will appear to move toward Y; and on the other hand, if . . . , and so forth.

II. That it is necessary to know the distance of objects in order to know the magnitude of their motion.

Clearly, the proof of all but the last of these propositions, which presents no difficulty, depends on but one thing, that ordinarily we cannot judge the distance of objects with assurance. For, if it is true that we cannot judge distance with certitude, it follows that we cannot know whether C has advanced toward D, or has come nearer to B, and likewise for the other propositions.

Now to see whether the judgments we form concerning distance are certain, we have only to examine the means we employ in judging it; and if the means are not certain, our judgments cannot be infallible. There are several such means and they must be explained.

III. An examination of the means of determining the distance of objects.

The first, most universal, and sometimes the surest means we have of judging the distance of objects at a short distance is the angle made by the rays of our eyes with the object as its apex, that is, where the object is the point where these rays meet. When this angle is very great, we see the object as very near; and when, on the other hand, it is very small, we see it as very remote. And the change that occurs in the state of our eyes according to the changes in this angle is the means the soul employs in order to judge the remoteness or proximity of objects. For just as a blind man could touch a given body with the ends of two straight sticks of unknown length and judge its approximate distance according to a kind of natural geometry by the position of his hands and the distance between them, so might the soul[a] be said to judge the distance of an object by the disposition of its eyes, which varies with the angle by which it sees the object, that is, with the distance of the object.

You will be readily convinced of what I say if you take the trouble to perform this very simple experiment. At the end of a string suspend a ring whose opening is facing away from you, or else drive a stick into the ground and pick up another stick with a curved end. Move three or four steps from the ring or stick. Cover one eye with one hand and try to pass the other hand through the ring, or with a hand over one eye and holding the stick in your other hand at a level approximately even with your eyes, try to touch the stick in the ground crosswise. You will be surprised to find yourself incapable of doing, in perhaps a hundred attempts, what appears quite easy. Even if you put the stick aside and try to pass one of your fingers through the ring, you will find some difficulty even though you might be quite close to the ring.

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[a] The soul does not perform all the judgments that I attribute to it—these natural judgments are only sensations—and I speak of them as such only for the sake of brevity and common speech. See article 4 of chapter 7.

But it must be noted that I said you should try to thread the ring or touch the stick crosswise and not in a straight line from the eye to the ring—for that would not be difficult at all, and indeed would be easier to bring off with one eye closed than with both open, since this would help to guide us.

Now it might be said that the difficulty found in threading a ring crosswise with only one eye open is a result of the fact that with the other closed, the angle I just spoke of is not known. For in order to know the size of the angle, it does not suffice to know the size of the base and of an angle formed on the base—as we know from the preceding experiment. It is still necessary to know the other angle formed on the base, or the length of one of the sides, which can be known exactly only by opening the other eye. Thus the soul cannot avail itself of its natural geometry to judge the distance of the ring.

The disposition of the eyes associated with the angle formed by the visual rays intersecting and meeting in the object is therefore one of the best and most universal means employed by the soul in judging the distance of things. If, then, this angle does not perceptibly change when the object is at some distance—whether it approaches or recedes from us—it will follow that this means is unreliable and that the soul cannot use it to judge the distance of that object.

Now it is easily seen that this angle changes noticeably when an object a foot away is moved to four feet away; but if it is moved only from four to eight feet, the change is much less perceptible, and if from eight to twelve feet, still less, and if from a thousand to a hundred thousand, hardly at all. Finally the change will no longer be perceptible, even if the object were carried to the imaginary spaces. Consequently, if there is sufficient space between A and C, the soul will be unable by this means to know whether the object is near B or D.

This is why we see the sun and the moon as though they were wrapped in the clouds although they are vastly distant from them. This is also why we naturally believe that the stars are at an equal distance, and that comets are fixed and almost motionless at the end of their course. We even imagine that comets vanish at the end of several months because they recede from us in an almost straight line from our eyes, and are then on their way to oblivion in the vast spaces from which they return only after several years or even centuries—for it is very likely that they do not vanish upon ceasing to be seen.

The second way of judging the distance of objects. In order to explain the second means employed by the soul to judge the distance of objects, it should be known that it is absolutely necessary for the shape of the eye to change with the distance of objects we see; for when a man sees an object nearby, his eyes are necessarily longer, or the crystalline lens is farther from the retina, than if the object were farther away. This is so because in order for the rays of this object to converge on the optic nerve (which is necessary to see it distinctly, especially when the object is poorly lighted), the distance between this nerve and the crystalline lens must be greater.

It is true that if the crystalline lens became more convex with the proximity of the object, this would have the same effect as if the eye were elongated.[a] But it is hard to believe that the crystalline lens can easily change its convexity, and we have, on the other hand, a rather likely proof that the eye does elongate. Anatomy teaches that there are muscles surrounding the middle of the eye whose effort is felt as they press and lengthen the eye when we wish to see something very near.

But the way in which this happens need not be known at this point—it is enough that change in the eye does occur, whether because the muscles surrounding the eye press it or because the small nerves that correspond to the *ciliary* ligaments (which hold the crystalline lens suspended between the other humors of the eye) relax in order to increase the convexity of the crystalline lens and tighten to decrease it, or, finally, because the pupil dilates and contracts, for there are many people whose eyes undergo no other change.

For, in short, the change that occurs, whatever it is, serves only to make the rays from objects converge properly on the optic nerve. Now, it is certain that whether we look at an object at five hundred feet or at ten thousand leagues, our eyes have the same disposition, with no perceptible change either in the muscles surrounding the eye, or in the nerves corresponding to the *ciliary* ligaments of the crystalline lens, or in the opening of the pupil, and the rays from objects converge exactly on the retina or optic nerve. Thus, the soul would judge that objects at a distance of ten thousand or a hundred thousand leagues are only five or six feet away, if it could judge their distance only through the eyes' disposition that I have just discussed.

Nevertheless, this method can certainly be of use to the soul when the object is near. If, for example, an object is only half a foot from us, we can perceive its distance well enough by the disposition of the muscles that press our eyes to make them longer. This disposition is even painful. If the object is two feet away, we can still make it out because the disposition of the muscles is still somewhat perceptible, though no longer painful. But if the object is moved several feet farther away, the disposition of our muscles becomes so slightly perceptible as to be completely useless in judging the distance of the object.

These, then, are two of the means the soul can be said to use in judging the distance of an object; they are quite useless when the object is from five to six hundred paces away and are not reliable even when the object is closer.

The third way of judging the distance of objects. The third way is the size of the image that is depicted on the fundus of the eye and that represents the objects we see. It is claimed that this image diminishes proportionately as the object recedes; but this decrease is proportionately less perceptible as the object whose distance changes is farther away. For when an object is at a reasonable distance, such as five or six hundred paces, more or less in proportion to its size, there occur rather considerable changes in its remoteness without any perceptible alteration occurring in the image that represents it, as is easy to demonstrate. Thus, this third way has the same defect as the other two we have just discussed.

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[a] See the last Elucidation, number 31, and following.

It should be further noted that the soul does not judge those objects as most remote whose image on the retina is smallest. When, for example, I see a man and a tree at a hundred paces, or several stars in the sky, I do not judge the man farther away than the tree, or the smaller stars more distant than the larger, although the images of the man and of the smaller stars formed on the retina are smaller than those of the tree and of the larger stars. The size of the object must be known from sense experience in order to judge its approximate distance; and because I know, or have several times seen, that a house is bigger than a man, although the image of a house might be bigger than that of a man, I nevertheless do not judge it or see it to be nearer.[a] The same holds true of the stars. Our eyes represent them all to us as at the same distance, though it is more reasonable to believe some of them to be much farther from us than others. Thus, there is an infinity of objects whose distance we cannot know since there is an infinity of objects whose size we do not know.

Fourth and fifth ways. We further judge the remoteness of an object by the force with which it acts upon our eyes, because a distant object acts much more feebly than do others, and also by the distinctness and clarity of the image formed in the eye, because when the object is remote, the eye's opening must be greater and consequently[b] the rays must converge somewhat confusedly. For this reason, objects that are poorly lighted or that we see confusedly appear to us more remote, and those bodies, on the other hand, that are luminous and that we see distinctly, appear to us closer. It is clear enough that these last two means are not reliable for judging the distance of objects with any certitude, and we need not pause here before coming to the last of all, which aids the imagination most and which most easily leads the soul to judge that objects are very remote.

The sixth way of judging the distance of objects. The sixth and principal means lies in the fact that the eye does not inform the soul of a single object apart from all others, but also makes it see all those between us and the main object of our attention.

When, for example, we look at a sufficiently remote bell tower, we ordinarily see at the same time several fields and houses between us and it. Because we make a judgment about the remoteness of these fields and houses, and yet see that the bell tower is beyond them, we also judge it to be farther away and even wider and higher than if we saw it by itself. Yet the size of the image traced on the fundus of the eye remains the same, whether or not there are fields and houses between us and it, provided that we see it from an equal distance, as has been supposed. Thus, we judge the size of objects by the distance we believe them to be at, and the things we see between us and the objects aid our imagination a great deal in judging their remoteness—just as we judge to the extent of our duration, or of the time that has passed since we performed some action, by the confused memory of things we have done or thoughts we have had successively since that action. For it is these thoughts and actions succeeding one another that help our mind to judge the length of a given time, or of some portion of our duration. Or rather, the confused memory of all these successive thoughts is the same thing as the judgment of our duration, just as the confused perception of the fields between us and the bell tower is the same thing as the natural judgment about the distance of the bell tower—for these judgments are but compound sensations.

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[a] See the Elucidations on this chapter in the *Résponse à M. Régis.*

[b] See the last Elucidation, number 17.

Hence it is easy to see the real reason why the moon appears much larger to us when it is rising than when it is well above the horizon.[a] For when it is rising, the moon appears to us several leagues away and even beyond the perceptual horizon or the terrestrial point at which our vision stops; whereas when it has climbed above the horizon, we judge it to be about half a league from us or seven or eight times higher than our houses. Thus, we judge it to be much bigger when it is near the horizon than when it is removed from the horizon, because when it is rising we judge it to be much farther from us than when it is very high above the horizon.

It is true that a great many philosophers attribute what we have been discussing to atmospheres rising from the earth. They claim that these atmospheres, refracting the rays from objects, make them appear larger. But they are certainly mistaken, because refraction increases only their elevation above the horizon and, on the contrary, somewhat reduces the visual angle at which they are seen. Refraction does not prevent the image traced at the fundus of our eyes when we view the rising moon from being smaller than that formed when it has long since risen.

Astronomers who measure the diameters of planets observe that the moon's diameter increases in direct proportion to its distance from the horizon and, consequently, inversely to its apparent size. Thus, the diameter of its image we have in the fundus of the eyes is smaller when we see it as larger. Indeed, when the moon is rising, it is farther from us by half the diameter of the earth than when it is perpendicular overhead. That is why its diameter increases when it rises above the horizon, for it is then coming toward us.

What makes us see the moon larger when it is rising, then, is not the refraction undergone by its rays in the atmospheres emitted from the earth, since the image formed by these rays is always smaller; rather, it is the natural judgment of its distance formed in us because it appears to us beyond the fields we see as remote, as has been explained previously. It is amazing that philosophers find the reason for this phenomenon and for this deception of our senses to be more difficult to find than the greatest *equations* of algebra.

This means of ours for judging the distance of an object by the distance of objects between us and it is often useful enough when the other means I have discussed are of no avail; for we can judge by this method that certain objects are several leagues removed from us, which we cannot do with the others. Yet if it be examined, it will be found defective.

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[a] See the Elucidations on this chapter in the *Résponse à M. Régis*. [17(1):263].

First, this means is of use only for objects on earth, since it can be used only rarely and then very impractically for those in the air or in the heavens. Second, it can be used on earth only for things at a distance of a few leagues. Third, it must be made certain that between us and the objects there are neither valleys nor mountains nor any such thing preventing its use. Actually I think there is no one who having performed sufficient experiments on the matter is not convinced that it is very difficult to judge the distance of objects with any certainty by means of visually perceiving things between us and them. And perhaps we have lingered on it too long.

These are all the means we have for judging the distance of objects, and their considerable defects have been noted. It must be inferred from these defects that judgments based on such unsure means must themselves be very uncertain.

From this the truth of the propositions I have advanced is easily shown. The object at C has been supposed at some distance from A; it can therefore at different times progress toward D or move nearer B, and without us realizing it, since there is no sure way to judge its distance. It can even move back toward D when it is taken to move toward B, because the object's image on the optic nerve sometimes increases. This can happen for several different reasons: the transparent matter between the eye and the object may cause greater refraction at one time than at another, or slight tremors might sometimes occur in this nerve, or finally, the impression caused by the imprecise conjunction of rays on this same nerve may diffuse and spread to parts that should not be disturbed by it. Thus the image of the same objects, being greater in these cases, leads the soul to believe that the object is moving nearer. The same must be said of the other propositions.

Before finishing this chapter, it should be noted that knowledge of the motion and rest of bodies in proportion to their greater proximity to us is very important to the preservation of our life, and that it is of little use to us to know the exact truth about things occurring in faraway places. For this clearly shows that what I have set forth generally concerning all the senses (that they inform us of things only in relation to the preservation of our bodies and not as they are in themselves) holds exactly true in this case—(a) we know the motion or rest of objects better as they come closer to us and (b) we are unable to judge them through the senses when they seem no longer to have any relation, or to have almost no relation, to our bodies (as when they are five or six hundred paces away and are of insignificant size, or even nearer than this and smaller, or finally, when they are larger but farther away).

I feel I must again warn that judgments about the distance, size, and so on, of objects are formed in the ways I have just explained, not by the soul, but by God according to the laws concerning the union of the soul and body. I have therefore called these sorts of judgments *natural* in order to emphasize that they occur in us independently of us, and even in spite of us. But as God fashions them in and for us in such a way that we could form them ourselves it we knew optics and geometry as God does, if we knew everything that occurs in our eyes and our brain, and if our soul could act on its own and cause its own sensations, I attribute to the soul the performance of judgments and inferences as well as the subsequent production of its sensations, which can be the effect only of an infinite power and intelligence. As soon as we open our eyes, God alone can inform us instantaneously of the size, figure, motion, and color of objects surrounding us. But as He does so only as a result of the impressions these objects make on our body, the reason for the variety of our sensations must be drawn from the known variety of these impressions—just as I have tried to do by supposing the soul to have a power and knowledge everyone knows it does not have, and which I have adequately noted that it does not have by terming the judgments on which our sensations depend, *natural.*

Furthermore, if some reflection is given to what takes place in us independently of us when we open our eyes in the countryside, you will visibly recognize that God must unceasingly act in us. I say God and not nature, for this vague term *nature,* so much in use, is no more appropriate in explaining what I mean than Aristotle's *entelechy.* You will realize, I say, that God always acts in consequence of the same laws, always according to the rules of geometry and optics, always dependently upon the knowledge of what takes place in our eyes compared with the situation and motion of our bodies, always in consequence of an infinity of instantaneous inferences, which tend to preserve our life and which vary with each movement of our eyes. (When I say inferences, I speak from a human point of view, for they are all performed by an eternal act.) In a word, if one thinks a bit about this single operation, he will perceive the hand of the Almighty and the impenetrable profundities of His wisdom in providence.

BOOK ONE: THE SENSES
Chapter Ten

Errors concerning sensible qualities. I. The distinction between soul and body. II. Explanation of the sense organs. III. The part of the body to which the soul is immediately joined. IV. The effect of objects on bodies. V. Their effect on the soul and the reasons why the soul does not perceive the movement of the body's fibers. VI. Four things we confuse in each sensation.

We saw in the preceding chapters that the judgments we form on the testimony of our eyes concerning extension, figure, and motion are never exactly true. Nonetheless, it must be agreed that they are not altogether false: they include at least this truth, that outside us there are figures, motion, and extension, whatever these may be.

It is true that we often see things that in fact are not, and never were, and that we should not conclude that a thing is outside us from the sole fact that we see it as outside us. There is no necessary connection between the presence of an idea to a man's mind and the existence of the thing the idea represents, and experiences in sleep or delirium sufficiently prove this. But even so, we can be assured that ordinarily extension, figure, and motion are external to us when we see them. These things are not merely imaginary; they are real, and we are not mistaken in believing that they have a real existence, independent of our mind,[a] though this is very difficult to prove conclusively.

It is certain, then, that the judgments we make concerning extension, figure, and motion of bodies include some measure of truth. But the same is not true of those concerning light, colors, tastes, odors, and all the other sensible qualities, for truth is never encountered here, as we shall show in the rest of this first book.

Light is not distinguished from colors here because they are not taken to be very different and cannot be explained separately. While treating them, we shall even be obliged to speak of the other sensible qualities in a general way because they are all explained by the same principle. The following matters demand very close attention, for they are of the utmost consequence and are useful in a way quite different from those preceding.

[a] See the *Elucidations* [6].

I. The distinction between soul and body.

I assume at the outset that the soul can be distinguished from the body by the positive attributes and properties these two substances will admit. The body is only extension in height, breadth, and depth, and all its properties consist only in (a) motion and rest, and (b) an infinity of different figures.[a] For it is clear: (1) that the idea of extension represents a substance, since one can think of extension without thinking of anything else; (2) this idea can represent only successive or permanent relations of distance, i.e., instances of motion and figure, for one can perceive in extension only what it contains. If it be assumed that extension is divided into such parts as may be imagined, at rest or in motion near each other, the relations among these parts will be clearly conceived; but one will never conceive them to be relations of joy, pleasure, pain, heat, taste, color, or any of the other sensible qualities, although these qualities are sensed when a certain change occurs in the body. I feel pain, for example, when a thorn pricks my finger; but the hole it makes is not the pain. The hole is in the finger—it is clearly conceived—and the pain is in the soul, for the soul senses it keenly and is disagreeably modified by it. Only the properties I have just spoken of, then, should be attributed to the body. The soul, on the other hand, is that I who thinks, who senses, who wills—it is the substance in which are found all the modifications of which I have an inner sensation [*sentiment intérieur*], and which subsist only in the soul that perceives them. Thus, no property other than its diverse thoughts should be attributed to the soul. I assume, then, that the soul can be distinguished from the body. If what I have just said is not enough to illustrate the difference between these two substances, one can read and meditate on some passages of Saint Augustine, such as chapter 10 of the tenth book of *The Trinity*, chapters 4 and 14 of the *Quantity of the Soul*, or Descartes's *Meditations*, particularly the part concerned with the distinction between the soul and body, or finally, the sixth discourse from Cordemoy's *Discernement de l'ame & du corps*.

II. Explanation of the sense organs.

I assume also that the anatomy of the sense organs is known, and that they are composed of tiny filaments originating in the middle of the brain, that they spread out into all our members in which there is feeling and that they finally lead without interruption to the exterior portions of the body, that so long as one is awake and in good health one end cannot be moved without the other being moved at the same time, since they are always made somewhat taut by the animal spirits they contain—just as one part of a taut string cannot be moved without the other being disturbed.

There is reason to believe that nerve filaments are hollow like little canals and are completely filled with animal spirits, especially when one is awake; that when the end of these filaments is disturbed, the spirits contained in them transmit to the brain the vibrations they have received from without. But it is not necessary now to examine whether the action of objects is communicated to the brain by the vibrations of the animal spirits or by the continuous displacement of the filaments right up to the brain. It is enough to know that it is communicated by one or the other means, or by both in conjunction.

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[a] *Dialogues on Metaphysics,* Dialogue 1, no. 1.2.

It should also be known that these filaments can be set in motion in two ways, either at the end outside the brain or at the end inside the brain. If they are agitated externally through the action of objects, and if their agitation is not communicated to the brain, as happens in sleep, the soul receives no new sensation. But if these tiny filaments are excited in the brain by the flow of animal spirits, or by some other cause, the soul perceives something, although the parts of these filaments lying outside the brain and spread throughout all the parts of our body, may be completely still, as happens during sleep.

III. The soul is immediately joined to that part of the brain where the filaments of the sense organs end.

It might be noted here in passing that it is known through experience that we can feel pain in parts of our bodies that have been amputated, because if the corresponding filaments of the brain are disturbed in the same way as if these parts had been injured, the soul senses a very real pain in these imaginary parts. All these things clearly show that the soul immediately resides in that part of the brain to which all the sense organs lead. When I say that it *resides* there, I mean only that it is aware of all the changes taking place there in relation to the objects that cause them, or customarily cause them, and that it perceives what happens outside this part only through the agency of the fibers ending there, or if you wish, through the agency of the different reactions of the spirits contained in these fibers. For I am convinced that the soul can immediately *reside* only in ideas, which alone can affect and stir the soul, and make it happy or unhappy, as I shall explain elsewhere. With this laid out and well understood, it will not be very difficult to see how sensation occurs, which must be explained with an example.

IV. An example of the effect objects have on the body.

When the point of a needle is pressed against the hand, the point separates and stimulates the fibers of the flesh. These fibers extend from this point to the brain, and when one is awake, they are taut enough to be disturbed only if those of the brain are disturbed. It follows then, that the extremities of these fibers in the brain are also stimulated. If the movement in the hand's fibers is moderate, so also will be the movement of the brain's fibers, and if the movement is violent enough to cause rupture in the hand, it will likewise be stronger and more violent in the brain.

Likewise, if the hand is brought near fire, the particles of wood, which are continually emitted in great number and with great violence (as reason, upon the default of vision, demonstrates), strike these fibers and communicate to them part of their agitation. If this action is moderate, then that of the extremities of the fibers in the brain, which correspond to the hand, will be moderate; and if this motion is violent enough to sever its parts, as happens when it is burned, the movement of the interior fibers of the brain will be proportionately stronger and more violent. This is what can be understood of what happens to our body when objects strike us; we must now see what happens to our soul.

V. The effect of objects on the soul and the reasons why the soul is unaware of the motion of the body's fibers.

It resides primarily, if I may so express it, in the part of the brain to which the filaments of our nerves lead. It is located there for the maintenance and preservation of all the parts of our body, and, consequently, it must be advised of all its changes and must be able to distinguish those that are agreeable to our body's constitution from those that are not, because it would be of no use to know them absolutely and without this relation to its body. Thus, although all these changes in our fibers really consist only in motion, which generally varies only in degree, the soul of necessity regards them as essential changes. For though they vary in themselves very little, changes in motion must always be taken as essential changes in relation to the preservation of the body.

The motion that causes pain, for example, often enough differs but little from that which causes a tickling sensation. There need not be any essential difference between these two motions, but there must be an essential difference between the tickling sensation and the pain that these motions cause in the soul. For the disturbance of the fibers accompanying the tickling sensation[a] is evidence to the soul of the well-being of its body, that it has sufficient strength to resist the object's impression, and that it need not fear being hurt by it. But the motion accompanying pain, being rather more violent, can rupture the body's fibers, and the soul must be warned of this by some unpleasant sensation so that it may guard against it. Thus, although the motions occurring in the body differ in themselves only in degree, nonetheless, if considered in relation to the preservation of our life, they can be said to differ essentially.

This is why our soul is unaware of the disturbances that objects excite in the fibers of our flesh. It would be of no use for the soul to know them, and it would not be thereby enlightened in order to judge whether the things surrounding us were capable of destroying or maintaining the body's equilibrium. But it feels affected by impressions that differ essentially and that, showing the qualities of objects in relation to the body, make it immediately and acutely aware of whether these objects are capable of doing it harm.

It should be considered, further, that if the soul perceived only what takes place in the hand when it is being burned, if it saw in it only the movement and rupture of fibers, it would hardly take any notice; it might even derive from it some whimsical satisfaction, like those simpletons who amuse themselves by breaking everything in furious orgies of destruction.

Or just as a prisoner would hardly be upset at seeing the walls enclosing him being demolished, and would even rejoice in the hope of soon being freed, so too if we perceived only the separation of the parts of our body when we were being burned, or were receiving some wound, we would soon be convinced that our happiness was not contained in a body that prevents us from enjoying the things that ought to make us happy. Thus, we would be very content to see it destroyed.

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[a] This confused inference or natural judgment which applies to the body what the soul senses, is but what might be called a compound sensation. See what I have already said about natural judgments, and the first chapter of the third book, 3.

Hence, it was with great wisdom that the Author of the union of our soul and body ordained that we should feel pain when a change capable of destroying it occurs in the body (as when a needle enters the flesh or fire separates some of its parts), and that we should feel a tickling sensation or a pleasant warmth when this movement is moderate, without perceiving what really happens in our bodies, or the movement of the fibers we have just spoken about. < There are three reasons for this:>

First, because while feeling pleasure and pain, which are things differing more than in degree, we more easily distinguish the objects that occasion them. Second, because if we must either embrace or flee the bodies surrounding us, this way of informing us is the quickest, and further, it less exhausts the capacity of a mind made only for God. Finally, because pleasure and pain are modifications of the soul that it feels in relation to the body, and that affect it more than the awareness of movement in the body's fibers—all of which forces the soul to take careful note of them and results in a very close union between the two parts of man. It is clear from all this that the senses were given us only for the preservation of our bodies and not for the acquisition of truth.

What has just been said about pain and tickling sensations should be understood to apply generally to all other sensations, as will be seen better in what follows. We began with these two sensations rather than with the others because these are most vivid and best illustrate my meaning.

It is now very easy to show that we fall into an infinity of errors concerning light and colors, and generally all sensible qualities such as heat, cold, odors, flavors, sound, pain, tickling; and if I were willing to pause to inquire individually into all the errors we fall into concerning all the objects of the senses, whole years would not be enough to deduce them because they are almost infinite. Thus, it will suffice to speak of them in general.

In almost all sensations there are four different things that we confuse because they all occur instantaneously and together. This confusion is the basis for all other errors of our senses.

VI. Four things we confuse in each sensation.

The first is the *action* of the object, i.e., in heat, for example, the motion and *impact* of the particles of wood against the fibers of the hand.

The second is the *passion* of the sense organ, i.e., the agitation of the fibers of the hand caused by the agitation of the tiny particles of fire, which agitation is communicated to the brain, because otherwise the soul would sense nothing.

The third is the *passion,* sensation, or perception of the soul, i.e., what each of us feels when near fire.

The fourth is the *judgment* the soul makes that what it perceives is in the hand and in the fire. Now this natural judgment is only a sensation, but the sensation or natural judgment is almost always followed by another, free judgment that the soul makes so habitually that it is almost unable to avoid it.

Obviously, these are four different things that are not difficult to distinguish but that one is likely to confuse because of the close union between soul and body, which union prevents us from precisely distinguishing the properties of matter from those of mind.

Nonetheless, it is easy to see that, of the four things taking place in us when we perceive some object, the first two pertain to the body but the latter can pertain only to the soul—provided that, as I have assumed, some thought be given to the nature of the soul and of the body. But these things must be explained individually.

BOOK ONE: THE SENSES
Chapter Eleven

I. The error we fall into concerning the action of objects against the exterior fibers of our senses. II. The cause of this error. III. An objection and reply.

In this chapter and the three following, we shall discuss the four things that we have just said are confused and taken for a simple sensation. Only in a general way shall we explain the errors we fall into, because if we wanted to enter into detail, we would never finish. The hope is always to facilitate the readers' discovery of all the errors into which the senses can lead us, but to this end, they are asked to meditate as carefully on the chapters that follow as on the one they have just read.

I. The error we fall into concerning the action of objects against the fibers of our senses.

The first of the things we confuse in each of our sensations is the action of objects on the exterior fibers of our body. Certainly, the difference between the soul's sensation and this action of objects is hardly ever noted, and this point needs no proof. Almost everyone believes that the heat he feels, for example, is in the fire causing it, that light is in the air, and that colors are on colored objects. They give no thought to the motion of the imperceptible bodies that cause, or rather, accompany, these sensations.

II. The cause of this error.

True, they do not judge that the pain is in the needle pricking them as they judge that the heat is in the fire. But the reason for this is that the needle and its action are visible whereas the particles of wood emitted from the fire, as well as their movement against our hands, are unseen. Thus, not seeing anything strike our hands when we warm ourselves and feel heat in them, we naturally judge that this heat is in the fire, having seen nothing else in it.

As a result, it is generally the case that we attribute our sensations to objects when the causes of these sensations are unknown. And because pain and tickling are produced by sensible bodies such as a needle or a feather that we can see and touch, we do not judge on this account that there is anything resembling these sensations in the objects causing them.

III. An objection.

It is nonetheless true that we cannot judge the burning sensation to be in the fire but only in the hand, although it has as its cause the tiny particles of wood as well as the heat, which we still attribute to the fire. But the reason for this is that this sensation is a kind of pain—having several times judged that pain is not in the external body causing it, we are led to make the same judgment about it.

We are further inclined to this judgment in that pain or a burning sensation directs the soul's attention to the parts of our body and this distracts our thought from anything else. The mind thus assigns the burning sensation to the object nearest it. Because we realize somewhat later that the burn has left visible marks in the place where we felt pain, we are confirmed in our judgment that the burning sensation is in the hand.

But this does not prevent us from embracing the general rule, *that we ordinarily attribute our sensations to objects whenever they act on us through the motion of invisible particles.* For this reason, it is generally believed that colors, light, odors, tastes, sound, and several other sensations, are in the air or in the external objects causing them,[a] because all these sensations are produced in us through the motion of imperceptible bodies.

It should not be imagined that it is up to us to assign the sensation of whiteness to snow or to see it as white, or to assign the pain to the pricked finger rather than to the thorn that pricks it. All of this occurs in us independently of us and even in spite of us as the natural judgments I spoke of in the ninth chapter. And this occurs in us solely in connection with the preservation of life; it is clear that vivid, affective sensations must be felt in the pricked finger rather than in the thorn in order to pull it away, and non-affective sensations of colors must be sensed in objects in order to distinguish them from each other. As I have not yet proved that objects are not seen in themselves nor explained what is seen when one looks at them, I can show clearly neither why nor how whiteness is joined to snow and color to objects. That depends on knowledge of the ideas that affect the soul and that enlighten, as it were, the mind's eyes when those of the body are opened.

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[a] I shall explain below in what sense objects are cause of our sensations.

BOOK ONE: THE SENSES
Chapter Twelve

I. Errors concerning the movement of the fibers of our senses. II. That we do not perceive this movement or we confuse it with our sensations. III. An experiment that proves this. IV. Three kinds of sensations. V. Errors accompanying them.

I. Errors concerning the motion or disturbance of the fibers of our senses.

The second thing found in each of our sensations is the disturbance of the fibers of our senses that is communicated to the brain. We are in error when we constantly confuse this disturbance with the soul's sensation and when we judge that there is no disturbance when we do not perceive it with the senses.

II. We confuse it with our soul's sensations, and we sometimes do not perceive this disturbance at all.

We confuse, for example, the vibration that fire excites in the fibers of our hand with the sensation of heat, and we say that the heat is in our hand. But because we do not perceive the disturbance caused by visible objects in the optic nerve at the fundus of the eye, we think that the nerve is not disturbed at all, and that it is not covered with the colors we see; rather, we judge that there is only the external object on which these colors are located. Nevertheless, it can be seen from the following experiment that colors are almost as strong and vivid on the fundus of the optic nerve as on visible objects.

III. An experiment that proves this.

Take the eye of a freshly slaughtered ox and replace the skin opposite the pupil where the optic nerve is located with a piece of paper thin enough to be transparent. Then set this eye in a window with the pupil outside and the back of the eye inside the room, which should be tightly sealed in order to be quite dark. All the colors of objects outside the room will then be seen distributed on the fundus of the eye, though represented as inverted. If these colors happen not to be vivid enough, the eye should be elongated by pressing its sides when the objects represented on the fundus of the eye are too close, or else it should be flattened when the objects are too far away.

It can be seen from this experiment that we should judge or perceive the colors at the fundus of the eye just as we judge that heat is in our hand, if our senses were given us to discover truth, and if we were led by reason in the judgments we form about the objects of our senses.

But to account entirely for the strangeness of our judgments about sensible qualities, it should be considered that the soul is so closely joined to its body and has even become so carnal since the Fall and consequently so incapable of concentration that it attributes to the body many things that belong only to itself, and hardly distinguishes itself from the body anymore. As a result, it not only attributes to it all the sensations we are now discussing but also the power of imagination and sometimes even the capability of reasoning, for many philosophers have been stupid and dense enough to believe that the soul is only the subtlest and rarest part of the body.

If you carefully read Tertullian, you will find only too much evidence for what I say, since he is himself of this opinion, following a great number of authors whom he cites. So certain is this that he tries to prove in his book *On the Soul* that we are obliged by faith, Scripture, and even by private revelation to believe that the soul is corporeal.[a] And this should not be surprising, since he has fallen into the utter folly of fancying that God Himself is corporeal. I have no desire to refute these opinions because I have assumed that you should have read certain works of Saint Augustine, or of Descartes, that will have sufficiently made clear the foolishness of these thoughts, and will have fixed in your mind the distinction between extension and thought, between the soul and the body.

The soul, then, is so blind that it misunderstands itself and does not recognize the ownership of its own sensations. But to explain this, three sorts of sensations must be distinguished in the soul: the strong and lively, the weak and languid, and those in between.

IV. An explication of three kinds of sensations in the soul.

Strong and lively sensations are those that startle and forcefully rouse the mind because they are either quite pleasant or else very unpleasant; such are pain, tickling sensations, extremes of heat or cold, and generally all those accompanied not only by traces in the brain but also by movement of spirits toward the body's interior parts, i.e., by a movement of spirits conducive to changing the body's position and to exciting the passions, as we shall explain elsewhere.

Weak and languid sensations are those having little affect on the soul and that are neither pleasant nor unpleasant, such as moderate light, all the colors, rather weak, ordinary sounds, and so on.

Finally I term intermediate between the strong and weak those sensations that moderately affect the soul, such as a strong light, or a great noise, and such. Now it should be noted that a weak and languid sensation can become intermediate, and finally strong and lively. For example, the sensation we have of light is weak when the light of a torch is dying or when the torch is at a distance, but the sensation can become intermediate if the torch is brought close enough to us, and it can finally become very strong and lively if we go so near the torch that it dazzles the eyes, or when we look at the sun. Thus, the sensation of light can be strong, weak, or intermediate by degrees.

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[a] Aug. *Ep.* 157.

V. Errors accompanying sensations.

Here then are the judgments our soul makes concerning these three kinds of sensations; we can see here that it almost always blindly follows sensible impressions or the natural judgments of the senses, and that it is content, as it were, to spread itself onto the objects it considers by clothing them with what it has stripped from itself.

The first of these sensations are so strong and lively that the soul can hardly help realizing they belong to it in some way. As a result, the soul not only judges them to be in objects, but it also believes them to be in the members of its body, which it considers as a part of itself. Thus, it judges not only that heat and cold are in fire and ice, but also that they are within its own hands.

As for weak sensations, they affect the soul so little that it does not believe they belong to it, nor that they are within it or its own body, but that they are only in objects. This is why we remove light and colors from our soul and eyes in order to adorn external objects with them, although reason teaches us that they are not to be found in the idea we have of matter, that we should judge them to be in our eyes as well as on objects, since they are seen there as well as in objects, as I have proved by the experiment of the ox's eye set in the opening of a window.

Now the reason why all men do not immediately see that colors, odors, tastes, and all other sensations are modifications of their soul is that we have no clear idea of our soul. For when we know a thing by the idea representing it, we clearly know the modifications it can have. Everybody agrees that roundness, for example, is a modification of extension, because everyone knows extension through a clear idea representing it.[a] Therefore, given that we do not know our soul through an idea, as I shall explain elsewhere, but only by the inner sensation we have of it, we do not know through simple perception but only through reasoning whether brightness, light, color, and the other weak and languid sensations are modifications of our soul. But for lively sensations such as pleasure and pain, we easily judge that they are in us because we perceive that they affect us, and we need not know them through their ideas in order to know that they belong to us.

As for the intermediate sensations, the soul finds itself puzzled. For, on the one hand, it wishes to follow the natural judgments of the senses, and, as a result, it denies ownership of these sorts of sensations as much as it can in order to attribute them to objects. But, on the other hand, it cannot but perceive within itself that they belong to it, particularly when these sensations approach those I have termed strong and lively. As a result of this, the following is how it operates with regard to the judgments it makes about them. If the sensation sufficiently affects it, the soul judges it to be in its own body as well as in the object. If the sensation affects it but very little, the soul judges it to be only in the object. And if the sensation is exactly intermediate between the strong and the weak, then the soul to the extent that it judges it only through the senses does not know what to believe concerning it.

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[a] See book 3, pt. 2, ch. 7.

For example, if you look at a candle from some distance, your soul judges that the light is only in the object. If you place the candle quite close to your eyes, your soul judges that the light is not only in the candle but also in your eyes. But if you step back a pace from the candle, the soul's judgment is suspended as to whether this light is only in the object. But the correct thought never occurs to the soul, that light is not and cannot be a property or a modification of matter and that it is in fact within the soul itself, because it never thinks to avail itself of reason in order to discover the truth about what is in it; the soul avails itself only of the senses, which never discover the truth and which were given only for the preservation of the body. Now the reason why the soul does not avail itself of reason, i.e., of pure intellection, when it considers an object perceptible to the senses is that the soul is not affected by things it perceives through pure intellection, and that, on the other hand, it is very much affected by sensible things; for the soul attends closely to things that greatly affect it and ignores things that do not. Thus, it almost always accords its free judgments to the natural judgments of the senses.

In order to judge intelligently, then, about light and colors as well as all other sensible qualities, the sensation of color must be carefully distinguished from the movement of the optic nerve, and reason must make it clear that (a) motion and impulse are properties of bodies and that therefore they can be found in objects and in our sense organs, but that (b) the light and colors we see are modifications of the soul, which are quite different from the above properties and of which we also have quite different ideas.

Certainly, a peasant, for example, sees colors perfectly well and distinguishes them from those things that have no color. It is also certain that he does not perceive any motion either in colored objects or in the fundus of his eye—color, therefore, is not motion. Likewise, a peasant perfectly well feels heat and knows it clearly enough to distinguish it from everything that is not heat—however, he does not believe merely that the fibers of his hand are excited. The heat that he feels, then, is not an instance of motion because the ideas of heat and of motion are different and each can be had without the other. There is no other reason for saying that a square is not a circle than that the idea of a square is different from that of a circle and that the one can be thought of without thinking of the other.

Little concentration is required to see that the natural cause of our sensations of anything need not itself contain the sensation. For just as light need not be in my hand for me to see light when I strike my eyes, so heat need not be in the fire for me to feel it when I bring my hands near it, nor does any sensible quality I perceive have to be in the object. It is enough that they cause some disturbance in the fibers of my flesh so that my soul to which it is joined may be modified by some sensation. There is no relation, it is true, between instances of motion and sensations. But neither is there any relation between the mind and body, and since nature or the will of the Creator allies these two substances (however opposed in their nature they may be), it should not be surprising if their modifications are reciprocal. Such must be the case so that together they make a whole.

It should be noted that our senses, having been given us for the preservation of our body, quite appropriately lead us to judge as we do about sensible qualities. It is more to our advantage to perceive pain and heat as being in our body than to judge them to be only in the objects causing them, because, given that pain and heat can injure our members, we should be warned when they are attacking us in order to avoid being hurt.

But such is not the case with colors—they ordinarily cannot injure the fundus of the eye (where they are focused), and we have no need to know that they are represented there. We need these colors only to know objects more distinctly, and that is why our senses lead us to attribute them solely to objects. Thus, the judgments into which our sense impressions lead us are quite correct, if they are considered in relation to the preservation of the body. But they are nevertheless quite bizarre and far removed from the truth, as we have already seen in part and shall see further in the following.

BOOK ONE: THE SENSES

Chapter Thirteen

I. The nature of sensations. II. That we know them better than we think. III. An objection and reply. IV. Why we fancy we know nothing of our sensations. V. That we are mistaken in thinking everyone has the same sensations of the same objects. VI. An objection and reply.

I. The definition of sensation.

The third thing found in each of our sensations, or what we sense when, for example, we are near a fire, is a *modification of our soul in relation to what takes place in the body to which it is joined.* This modification is pleasant when what occurs in the body helps the circulation of the blood and the other vital functions, and is equivocally termed heat. The modification is painful and altogether different from the former when what occurs in the body can disturb it or burn it (i.e., when the motion in the body can injure some of its fibers) and is ordinarily called pain or a burning sensation. The same holds for the other sensations, but here are the commonly accepted views on the matter.

II. We know our own sensations better than we think.

The first mistake is that we think we have no knowledge of our sensations. There are some people who are at a loss to know what pain is, as well as pleasure and the other sensations, because they confuse the soul and body and do not agree that sensations are only in the soul and are but modifications of it. Surely these types are remarkable for wishing to be taught what they cannot fail to know, because a man cannot be entirely ignorant of what pain is when he feels it.

Someone who burns his hand, for example, distinguishes quite well the pain he feels from light, color, sound, tastes, odors, pleasures, and from all pains other than the one he feels; he distinguishes it from wonder, from desire, from love; he distinguishes it from a square, from a circle, from motion—in short, he recognizes it as different from everything that is not the pain he feels. Now if he had no knowledge of pain, I would like to know how he could realize with clarity and certitude that what he feels is none of these things.

To a certain extent, then, when we see colors or have some other sensation, we know what we immediately perceive. Indeed, if we did not know, we certainly would not know any sensible object, because we surely would not be able to tell wine from water if we did not know that the sensations we have of the one are different from those we have of the other and hence from everything of which we have knowledge through the senses.

III. An objection and reply.

It is true that if I were pressed and asked to explain what pain, pleasure, color, and so on, are, I could not completely do so with words. But it does not follow from this that if I saw color, or if I burned myself, I would not know at least to some extent what I was then perceiving.

Now the reason why all sensations cannot, like all other things, be explained with words is that it depends on men's will to attach the ideas of things to such terms as please them. They can call the sky *Ouranos,* or *Schamajim,* and so forth, like the Greeks and Hebrews; but these same men do not attach at will their sensations to words or to anything else. Though one may talk to them about colors, if they do not open their eyes, they do not see colors. They do not taste flavors unless some change takes place in the order of the fibers of their tongue and brain. In a word, sensations do not depend upon the will of man, and only He who fashioned them keeps them in this mutual correspondence of modifications in soul and body. As a result, if a man wants me to represent heat or color to him, I cannot do so with words—I must impress on his sense organs the motion to which nature has attached these sensations, i.e., I must bring him near fire and show him pictures.

This is why blind people cannot be given the least knowledge of what is meant by red, green, yellow, and so on. Since we cannot make ourselves understood unless our listeners have the same ideas as ours, it is clear that these sensations, not being attached to the sound of words or to the nerve of the ear but to that of the optic nerve cannot be depicted for the blind, since their optic nerve cannot be excited by colored objects.

IV. How it happens that we imagine ourselves ignorant of our own sensations.

We have some knowledge, then, of our sensations. Now let us see how it is that we still seek to know them and believe we have no knowledge of them. Here, no doubt, is the reason.

Since Original Sin, the soul has become corporeal, as it were, in its inclinations. Its love for sensible things continuously erodes its union or tie with intelligible things. Only with distaste does it conceive of nonsensible things, and it is immediately ready to disregard them. It makes every effort to produce images in the brain representing them, and so accustomed is it from its infancy to this kind of conception that it believes itself not to know what it cannot imagine. Nevertheless, there are some things, such as our soul with all its modifications, that, not being corporeal, cannot be represented to the mind by corporeal images. When, therefore, our soul wishes to represent to itself its own nature and its own sensations, it tries to form a corporeal image of them. It looks around among corporeal beings—it takes itself now for one, now for another, now for air, now for fire, now for the harmony of its body's parts. Thus, bent on being located among bodies and on fancying its own modifications as modifications of bodies, the soul should cause no wonder if it loses its bearings and altogether misunderstands itself.

What leads the soul even more into wanting a fanciful view of its sensations is that it judges them to be in objects and even to be modifications of objects, and consequently that they are corporeal and can be imagined. Thus, it judges that the nature of its sensations consists only in the motion that causes them, or in some other modification of body. This is different from what it perceives, which has nothing corporeal about it and cannot be represented by corporeal images. This state of affairs confuses the soul and makes it believe that it does not know its own sensations.

As for those who do not waste their time trying to represent the soul and its modifications with corporeal images and who yet continually ask to have sensation explained to them, they should know that neither the soul nor its modifications can be known through ideas (taking the word *idea* in its true sense, as I explain and specify it in the third book[a]) but only by *inner sensation*. Thus, when they wish to have the soul and its sensations explained to them with ideas, they want what even all men combined cannot give them, since men cannot teach us by giving us ideas of things, but only by making us think about those we naturally possess.

The second error we fall into concerning sensation is to attribute them to objects; this error was explained in chapters eleven and twelve.

V. That we are mistaken in thinking that everyone has the same sensations of the same objects.

The third error is that we judge that everyone has the same sensations of the same objects. We believe, for example, that everyone sees the blue sky, the green meadows, and all visible objects in the same way we see them (and so for all other sensible qualities of the other senses). Some people will be surprised that I cast doubt on things they thought indubitable. Nonetheless, I can guarantee that they have never had any justification for judging these things as they have; and although I cannot demonstrate mathematically that they are mistaken, I can nevertheless demonstrate that if they are not mistaken it is through the most remarkable luck in the world. But I still have reasons that warrant the claim that they really are in error.

To grasp the truth of what I am suggesting, what I have already proved must be recalled, namely, that there is a big difference between sensations and the causes of sensations. It may be concluded from this that, strictly speaking, it can happen that similar motions in the interior fibers of the optic nerve do not produce the same sensation for different people, i.e., do not make them see the same colors; and it might happen that motion that will cause the sensation of blue in one person will cause that of green or gray in another, or even a novel sensation that no one has ever had.

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[a] Pt. 2, ch. 7. See also the Elucidation on the same chapter.

Certainly, this is possible and any demonstration to the contrary is without foundation. Yet I agree that it is not likely that such is the case. It is more reasonable to believe that God always acts in the same way in establishing the union between our souls and bodies, and that He joins the same ideas and sensations to similar motion of the brain's interior fibers in different people.

Though the same motion of fibers terminating in the brain may be accompanied by the same sensations in all men, if the same objects happen not to produce the same motion in their brain, they consequently will not excite the same sensations in their soul. Now it seems to me beyond question that everyone's sense organs, not being disposed in the same way, cannot receive the same impressions from the same objects.

The punches that porters give each other by way of compliment would cripple more delicate people. The same blow produces quite different motion and consequently quite different sensations in a man of robust constitution and in a child or a woman of delicate nature. Since there are no two people who can be guaranteed to have identical sense organs, it cannot be guaranteed that there are two people in this world having completely the same sensations of the same objects.

Here is the source of that vast variety found in men's inclinations. Some like music a great deal and others are indifferent to it. Even among those who enjoy it, some like one kind of music, others another, depending on the almost infinite variety found in the aural fibers, the blood, and the spirits. How much difference there is, for example, between the music of France and that of Italy and of China and of other lands, and as a result, between the taste these different peoples have for the different kinds of music. It even happens that one receives different impressions at different times from the same concertos. If your imagination is carried away by a great abundance of agitated spirits, you enjoy listening more to robust music that allows more dissonances than to more mellow music, which follows rules and mathematical precision more closely. Experience proves this, and the reason for it can easily be supplied.

The same holds true for odors. Those who like orange blossom may find roses unbearable, and vice versa.

As for tastes, there is as much diversity here as in the other sensations. Sauces must be altogether different to be equally pleasing to different people, or to be equally pleasing to the same person at different times. One likes the sweet, another likes the sour. One finds wine pleasant, another abhors it; and the same person who finds it pleasant when he is well finds it bitter when in a fever—and so on for the other senses. Yet all men like pleasure, they all like pleasant sensations, and in this they all have the same inclination. Hence they do not all receive the same sensations from the same objects, since they do not like them equally.

Thus, what makes one man say he likes sweetness is that the sensation he has of it is pleasant, and what makes another say that he does not like sweetness is, if the truth be known, that he does not have the same sensation as he who likes it. When he says that he does not like sweetness, then, it does not mean that he does not like to have the sensation the other is having, but only that he does not have it. As a result, it is incorrect to say that one does not like sweetness; one ought to say that he does not like the sugar, the honey, and so on, that others find sweet and enjoyable, and that he does not experience the same taste as others because the fibers of his tongue are differently disposed.

Here is a more illustrative example. Suppose that there are twenty people, and that one of them, who does not know the words used in France to indicate cold and warmth, has cold hands, and the others have extremely warm hands. If tepid water were brought to them during the winter for washing, those with warm hands, taking their turns to wash first, would say, this is very cold water, I do not like it at all. But when he with the very cold hands finally had his turn to wash, he would say, I do not know why you do not like cold water; for myself I find the sensation of cold water and washing in it quite pleasing.

It is quite clear in this example that when this fellow says, I like cold, it means nothing if not that he likes warmth and that he feels warmth where others feel the opposite.

Thus, when a man says, I like what is bitter and cannot stand sweets, it can only mean that he does not have the same sensations as those who claim to like sweets, and who dislike what is bitter.

It is certain, then, that a sensation that is enjoyable to one person is enjoyable to everyone who feels it, but, on account of the different disposition of the sense organs, the same objects do not produce the sensation for everyone. This matter is of utmost importance for both physics and morals.

[VI.] An easily resolved objection might be raised here, namely, that it sometimes happens that people who like certain meats a great deal wind up by abhorring them, either because they have unexpectedly found some foreign matter mixed in while eating it, or because they have eaten it to excess and have become quite sick, or for some other reason. These people, it will be claimed, no longer like the same sensations they formerly liked; for they still have the same sensations when they eat the same meat, and yet these sensations are no longer pleasant.

To answer this objection, it should be noted that when these people taste meats that they abhor and find disgusting, they have at the same time two quite different sensations. They have the sensation of the meat they are eating (which the objection assumes); but they also have the further sensation of disgust, which springs, for example, from vividly imagining the foreign matter they have seen to be mixed with what they are eating. The reason for this is that when two movements are produced in the brain simultaneously, the one is no longer aroused without the other unless a considerable time has elapsed. Thus, because the pleasant sensation never arises without the distasteful one, and because we confuse things produced simultaneously, we fancy that the sensation that had been pleasant is no longer so. Yet if the sensation remains the same, it must always be pleasant. As a result of this, if the sensation is fancied unpleasant, the reason is that it is coupled and confused with another that is more disgusting than it itself is pleasant.

There is more difficulty in proving that colors and certain other sensations I have called weak and languid are not the same in all men, because all these sensations so little affect the soul that, unlike tastes or other stronger and livelier sensations, one of these cannot be determined as more pleasant than another, and thus the variety of people's sensations cannot be seen from the diversity of their pleasure and disgust. Yet reason, which shows that the other sensations are not alike in different people, also shows that there must be diversity in our sensations of colors. Indeed, it cannot be doubted that there is a great deal of diversity in different people's organs of sight as well as of hearing and taste, for there is no reason to suppose a perfect resemblance in the optic nerve of all men since there is an infinite variety found in nature's works and especially in material things. There is some indication, then, that not all men see the same colors in the same objects.

Yet I believe that it never, or almost never, happens that people see black or white other than as we see them, though they may not seem equally black or white to them. But as for the intermediate colors, such as red, yellow, blue, and especially those compounded from these three, I do not think there are many people who have exactly the same sensation of them. There are some people who see certain objects yellow with one eye and as green or blue with the other. Yet if these people be supposed born one-eyed, or with two eyes disposed to see as blue what we call green, they would think they saw objects as having the same color that we see them as having because they would always have heard called green what they would see as blue.

That not all men see the same objects as having the same color might further be shown in that, according to the statements of some, the same colors are not equally pleasing to all kinds of people, since if these sensations were the same they would be equally pleasing to everyone. But because very strong objections based on my reply to the preceding objection could be raised against this proof, it was not thought sound enough to be proposed here.

Indeed, it is rare enough that one color is much more pleasing than another in the same way that one taste is much more pleasing than another. The reason for this is that sensations of color are not given to us for judging whether bodies are nourishing or not. This is indicated by pleasure and pain, which are the natural marks of good and evil. Insofar as they are colored, objects are neither bad nor good for eating. If objects appeared to us pleasant or unpleasant insofar as they are colored, the perception of them would always be followed by a flow of spirits that excites and accompanies the passions, since the soul cannot be affected without being moved emotionally. We would often detest good things and like the bad, so that we would not long preserve our life. In conclusion, sensations of color are given to us only for the purpose of picking out one body from another, and it would do as well to see the grass as red or green as long as the person seeing it as red or green always saw it in the same way.

But enough of these sensations. Let us now speak about natural judgments and the free judgments accompanying them. This is the fourth thing we confuse with the other three we have just dealt with.

BOOK ONE: THE SENSES
Chapter Fourteen

I. The false judgments that accompany our sensations and are confused with them. II. Reasons for these false judgments. III. That error is found not in our sensations but only in these judgments.

I. The false judgments that accompany our sensations and are confused with them.

It can be predicted at the outset that few people will not be taken aback by the following general proposition, viz., that we have no sensation of external objects that does not involve one or more false judgments. It is well known that most people do not even think there is any judgment, true or false, in our sensations. Consequently, these people, surprised by the novelty of this proposition, will undoubtedly say to themselves: but how can that be? I do not judge that this wall is white, I see that it is; I do not judge that there is pain in my hand, I assuredly feel it there; and who can doubt what is so certain unless he senses things in a way different from mine? Their inclination toward childish prejudices will eventually lead them much further, and if they do not go on to insult and despise those whom they believe to be of another opinion, they will undoubtedly deserve to be counted among reasonable people.

But time need not be taken to predict the unhappy reception of our thoughts. It would be more appropriate to express them with such strong arguments and to place them in such a clear light that no one with his eyes open could attack them or carefully consider them without submitting to them. We must now prove that we have no sensation of external objects that does not include some false judgment. Here is that proof.

It seems to me beyond question that our souls do not occupy a space as vast as that between us and the fixed stars, even if it be agreed our souls are extended; thus, it is unreasonable to think that our souls are in the heavens when they see stars there. It is not even thinkable that they should be projected a thousand feet from their bodies in order to see houses at that distance. Our soul, then, must see stars and houses where they are not, since the soul does not leave the body where it is located, and yet sees them outside it. Now given that the stars immediately joined to the soul (which are the only stars it can see) are not in the heavens, it follows that everyone who sees the stars in the heavens and who then voluntarily judges they are there performs two false judgments, one of which is natural, the other free. One is a judgment of the senses or a compound sensation, which is within us, occurs independently of us, and even in spite of us, and according to which no judgment should be made. The other is a free judgment of the will, which can be avoided, and which consequently we must not make if we wish to avoid error.

II. The reason for these false judgments.

But here is why these same stars that are immediately seen are thought to be external to the soul and in the heavens. The reason is that it is not in the soul's power to see them at will, for it can perceive them only when the motion to which the ideas of these objects are joined by nature occurs in the brain. Now, because the soul is not aware of motion in the sense organs but only of its own sensations, and because it knows that these sensations are not produced within it by itself, the soul is led to judge that they are external to it, and in the cause that represents them to it. It has made these kinds of judgments so many times simultaneously with its perception of objects, that it can hardly avoid making them.

To explain fully what I have just said, it would be necessary to show the uselessness of that infinite number of insignificant beings termed species and ideas, which are as nothing and which yet represent all things, which we create and destroy at will, and which our ignorance has led us to imagine in order to make sense of things we do not understand. It would be necessary to demonstrate the soundness of the opinion of those who believe that God is the true father of the light that alone enlightens all men and without which the simplest of truths would not be intelligible, and without which the sun, as bright as it is, would not even be visible. For this opinion has led me to the discovery of the following, seemingly paradoxical, truth. Ideas that represent creatures to us are but the perfections of God that correspond to these creatures, and that represent them. In a word, it would be necessary to explicate and then prove my view of the nature of ideas, and then there would be no difficulty in speaking more clearly about the things I have just discussed; but that would lead us too far astray. All this will not be explained until the third book, according to the requirements of order. For the moment it is enough that I produce an illustrative and uncontroversial example in which several judgments are found confused with the same sensation.

I do not think there is anyone in the world who in looking at the moon does not see it about a thousand feet away, and who does not find it larger when it is rising or setting than when it has risen well above the horizon; indeed, perhaps everyone believes that he simply sees that it is larger without realizing that there is any judgment involved in sensation. Yet it is beyond question that if there were not some kind of judgment involved in sensation, he would not see the moon as close as it appears to him. In addition to this, he would see it smaller when it is rising than when it has risen well above the horizon, since we see it larger when it is rising only because we judge it as being farther away through a natural judgment that I discussed in the sixth chapter.

But over and above our natural judgments, which might be regarded as compound sensations, a free judgment is found in practically all our sensations; for men not only judge through a natural judgment that pain, for example, is in their hand, they also judge it by a free judgment; not only do they feel it there, they also believe it to be there, and they have become so accustomed to forming such judgments that they have great difficulty avoiding them. Yet in themselves these judgments, though quite useful for the preservation of life, are quite false. Our senses instruct us only for the benefit of the body, and all free judgments in agreement with the judgments of sense are far removed from the truth.

But in order not to leave these things without giving some way of discovering their causes [*raisons*], it should be noted that there are two kinds of beings, those our soul sees immediately, and those it knows only by means of the former.[a] For example, when I see the sun rise, I first perceive what I see immediately, and because I perceive this only because there is something outside me that produces certain motions in my eyes and brain, I judge that this first sun, which is in my soul, is external to me and that it exists.

Yet it can happen that we see this first sun, which is intimately joined to our soul, without the other being on the horizon, and even without it existing at all. Likewise we can see this first sun as larger when the other is rising than when it has risen well above the horizon; and although it is true that this first sun that we see immediately is larger when the other is rising, it does not follow that this other that we are looking at, or, rather, toward which we are turning our eyes, is larger. For it is really not the rising sun that we see or are looking at, since this one is several million leagues away. Rather, we see the former, which really is larger and is such as we see it, because all things that we see immediately are always such as we see them, and we err only because we judge that what we see immediately is found in the external objects that are the cause of what we see.

Likewise, when we see light while looking at the sun that is immediately joined to our mind, we do not err in believing that we see it—it is impossible to believe otherwise. Our error is that, without any reason and indeed against all reason, we require the light we immediately see to exist in the sun outside us. The same holds true for the other objects of our senses.

III. Error is found not in our sensations but only in our judgments.

If attention is paid to what we have said in this work, it will be easy to see that, of all the things found in every sensation, error is encountered only in the judgments we make that our sensations are in objects.

First, it is no error not to know that the action of objects consists in the motion of their parts and that this motion is communicated to our sense organs, which are the first two things found in every sensation. For there is a big difference between not knowing something and being in error with regard to that thing.

Second, we do not err at all with regard to the third thing, which is strictly speaking the sensation. When we feel heat, when we see light, or colors, or other objects, we do in fact see them, even in delirium. Nothing is truer than that all visionaries see what they see; their error lies only in their judgments that what they see really exists externally because they see it externally.

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[a] In order to fully understand this it is necessary to have read what I shall say concerning the nature of ideas in the third book, or in the first two *Dialogues on Metaphysics*.

This judgment involves the consent of our freedom and, as a result, is liable to error. We should always avoid making it, according to the rule we laid down at the outset of this book: that we should never judge of anything at all when we can avoid doing so and when we are not constrained by evidence and certainty, as is the case here. For although we feel ourselves strongly inclined by an entrenched habit toward judging that our sensations are in objects, e.g., that heat is in fire and colors in pictures, yet we see no clear and certain reason compelling us to believe this; and thus we voluntarily submit to error through the misuse of our freedom when we freely form such judgments.

BOOK ONE: THE SENSES
Chapter Fifteen

An explanation of the particular errors of sight as an example of the general errors of our senses.

It seems to me we have sufficiently exposed the errors of the senses with regard to sensible qualities in general, which we discussed with regard to light and colors-, whose explanation was required by order. We might now be expected to descend to particulars somewhat, and examine in detail the errors into which each of our senses leads us. But we shall not linger over these matters, because after what has already been said, a little concentration will easily provide the tedious explanation that would have to be given. We shall relate only the general errors into which our vision plunges us concerning light and colors. This example will be enough, we believe, to demonstrate the errors of the other senses.

When we have looked at the sun for a while, here is what happens to our eyes and our soul, and here are the errors into which we stumble.

Those who know the rudiments of dioptrics and something of the eye's remarkable structure must know that the sun's rays undergo refraction in the *crystalline lens* and in the other humors, and that they then converge on the *retina* or optic nerve, which covers the entire fundus of the eye—just as the sun's rays, after passing through a *magnifying glass* or convex lens, converge at the *focus* or the burning point of the lens, two, three, or four inches from it, inversely proportional to its convexity. Now experience teaches that if a piece of cloth or black paper[a] is placed at the focus of the magnifying glass, the rays of the sun make so great an impact on the material or paper, and agitate their particles with such violence, that they break them and separate them from each other. In a word, the rays burn them or reduce them to smoke and ashes.

It must therefore be concluded from the experiment that if the optic nerve were black and the pupil or the opening in the *uvea* by which light enters the eye were to enlarge, letting the sun's rays pass in freely instead of contracting to obstruct them, what happens to the black cloth or paper would happen to our retina, and its fibers would be so agitated that they would soon be broken down and burned. This is why most people feel great pain if they look at the sun for a bit—because they cannot close the opening in the pupil sufficiently to prevent enough rays from entering and so violently agitating the fibers of the optic nerve that they stand in danger of being broken.

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[a] Black paper burns easily, but a larger or more convex magnifying glass is needed to burn white paper.

The soul has no knowledge of all we have just said, and when it looks at the sun it is aware neither of its optic nerve nor of the motion in this nerve. But this is not error, only ignorance. The first error it falls into is to judge that the pain it feels is in the eye.

If immediately after looking at the sun one enters a dark place with open eyes, this violent disturbance of the optic nerve's fibers caused by the rays of the sun diminishes and is gradually transformed. This is the only change conceivable in the fibers of the retina, except for some minor convulsions that occur in all nerves when they are injured. Yet the soul does not perceive this, but only a white and yellow light, and its second error is to judge that the light it sees is in its eyes or on a nearby wall.

Finally the agitation of the *retina's* fibers diminishes continually and gradually ceases altogether. This is not what the soul senses in the eyes. It sees that the white color becomes orange, then changes into red, into green, and finally into blue, that the brilliance of the colors gradually diminishes with the disturbance of the *retina*, and that the former colors return, though in disorderly fashion due to the convulsion it undergoes. The third error into which we fall is to judge that in our eye or on the wall nearby there are alterations that differ other than quantitatively, because the blue, orange, and red colors we see do not differ from one another merely quantitatively.

There you have some of the errors into which we fall concerning light and colors, and these errors lead us into many others, as we are going to explain in the following chapters.

BOOK ONE: THE SENSES
Chapter Sixteen

I. That the errors of our senses provide us with general premises very conducive to false conclusions, which themselves provide further premises. II. The origin of essential differences. III. Substantial forms. IV. Several other errors of the school philosophy.

[*I.*] *The errors of our senses provide us with general premises conducive to false conclusions, which themselves provide further premises.*

I feel that we have sufficiently explained for those who are not distracted or incapable of concentration just what our sensations consist of and the general errors found in them. It is now appropriate to show (a) that these general errors are used as indubitable premises in the explanation of everything; (b) that an infinite number of false conclusions are drawn from them that are then used as premises from which other conclusions are drawn; and finally, (c) that these fictitious sciences have been built up gradually without substance or reality and ultimately lead only to blind groping—sciences that are like ghosts and only yield their supporters either confusion and shame for letting themselves be seduced, or that insanity which enjoys feasting on illusions and chimeras. This is what must be shown in detail through examples.

We have already said that we habitually attribute our own sensations to objects, and that we judge colors, odors, tastes, and other sensible qualities to be in the bodies we call colored, odiferous, and flavored, and so on for the other sensible qualities. We have seen that this is a mistake. Now it must be shown that we employ this error as a premise in drawing false conclusions, which in turn are considered as premises upon which we continue to base arguments. In a word, we must indicate the path the human mind takes in looking for particular truths when the false premise, *that our sensations are in objects*, appears indubitable.

But to illustrate this better, let us take a particular body whose nature we might inquire into—let us look at what a man would do who wanted to know what honey or salt is. The first thing he would do would be to examine the color, odor, taste, and other sensible qualities, both of the honey and of the salt, asking how they agree, how they differ, and the relations they might have with other bodies.

After that, the following is roughly how he would reason, given that he assumed as an indubitable premise, that our sensations are in the objects of sense.

II. The source of differences we attribute to objects; that these differences are in the soul.

Everything I perceive while tasting, seeing, and handling the honey and the salt are in the honey and the salt. Now, what I perceive in the honey undoubtedly differs essentially from what I perceive in the salt. The whiteness of salt and the color of honey unquestionably differ more than merely quantitatively. The same holds for the sweetness of the honey and the sharp tast of the salt. Consequently, there must be an essential difference between honey and salt, since what I perceive in each differs not merely quantitatively, but essentially.

Here we have the first move this person would make. For undoubtedly he can judge that honey and salt differ essentially only because he finds the appearances of one to differ essentially from those of the other, i.e., that his sensations of honey differ essentially from his sensations of salt, since he can judge them only by the impression they make on his senses. He then views his conclusion as a new premise, drawing from it other conclusions in similar fashion.

III. The origin of substantial forms.

Since honey, salt, and other natural bodies differ essentially from each other, it follows that a great mistake is made by those who would have us believe that all difference between bodies is but a matter of the different configuration of the particles composing them. For, given that figure is not essential to different bodies, if the figure of these particles changes, the honey will remain honey, even if these particles were to have the figure of salt particles. Thus, there must of necessity be some substance that, being joined to the primary matter common to each different body, makes them differ essentially from one another.

Here we have the second move he would make, as well as the happy discovery of *substantial forms*—those fertile substances that make everything we see in nature, though they subsist only in the imagination of our philosopher. But let us take a look at the properties he is going to liberally bestow upon this entity of his own invention, for he will undoubtedly strip all other substances of their most essential properties in order to invest it with them.

IV. The source of all the other most general errors of school physics.

Since every natural body is composed of two substances, one that is common to honey, salt, and all other bodies, and the other that makes honey, salt, and all other bodies what they are, it follows that the first (matter), indifferent to all forms and having no contrary, must remain impotent and inactive, since it need not defend itself. But substantial forms, on the other hand, must always be accompanied by qualities and faculties to defend them. They must always stand guard against being surprised; they must continually try to preserve themselves, to extend their dominion over neighboring matter, and to push their conquest as far as they can, because if they were impotent or failed to act, other forms would immediately catch them unawares and annihilate them. They must struggle continuously, then, and they must nourish these antipathies and irreconcilable hatred against those hostile forms whose only mission is to destroy them.

Should a form happen to ensnare another form's matter, should the form cadaver, for example, catch hold of the body of a dog, the form need not indulge itself in annihilating the dog's form; the satisfaction of its hatred requires the destruction of all the qualities that were part of the enemy's camp. The hair on the cadaver must immediately be white with a newly created whiteness, its blood must be red with an unmistakable redness, the entire body must be blanketed by qualities faithful to their mistress, and these qualities must defend her with the little strength had by a corpse's qualities that in turn must soon perish. But because one cannot struggle endlessly, and because all things have a place of rest, it is undoubtedly necessary that fire, for example, have its center, which it continually tries to achieve through its lightness and natural inclination so that it might be at rest, cease burning, and even give up its heat, which it keeps here below only to defend itself.

Here is a small part of the conclusions drawn from the premise that there are substantial forms, which we have had our philosopher draw a bit too freely, for others usually say these same things more seriously than we have here.

There is an infinity of still other conclusions drawn daily by every philosopher, depending on his mood and inclination, and on the fertility or sterility of his imagination, for these are the only things that distinguish one philosopher from another.

We shall not pause here to combat these chimerical substances, which others have sufficiently examined. They have shown that substantial forms never existed in nature, and that they serve to draw a very great number of false, ridiculous, and even contradictory conclusions. It is enough here to have recognized that their origin is in the mind of man and that they owe their present existence to that prejudice common to all men, *that their sensations are in the objects they sense*. For if you carefully consider what we have already said,[a] namely, that for the preservation of the body, our sensations must be essentially different, though the impressions that objects make on our body differ but very little, you will clearly see that it is wrong to imagine such great differences in the objects of our senses.

But I should point out here in passing that there is nothing wrong with the terms *form* and *essential difference*. Honey is undoubtedly honey through its form, and in this lies its essential difference from salt. But this form or essential difference is only a matter of the different configuration of its parts. This different configuration makes honey and salt what they are; and although matter in general has the configuration of the parts of honey or of salt, and hence the form of honey or of salt, only accidentally, yet it can be said that a given configuration of their parts is essential for honey or salt to be what they are. Likewise sensations of cold, heat, pleasure, and pain are not essential to the soul, but only to the soul sensing them, because through these sensations it is called upon to feel heat, cold, pleasure, and pain.

[a] Ch. 10, art. 5.

BOOK ONE: THE SENSES
Chapter Seventeen

I. A different example drawn from morals, which shows that our senses offer us only false goods. II. That only God is our good. III. The source of the errors of the Stoics and Epicureans.

We have presented proofs that would seem to show that the prejudice *that our sensations are in objects* is a fertile source of errors in physics. We must now produce others taken from morals, in which it, in conjunction with the following prejudice, *that the objects of our senses are the true causes of our sensations*, is also very dangerous.

I. An example taken from morals, to the effect that our senses provide us only with false goods.

Nothing is so common as the sight of people dedicated to sensible goods—some like music, others good living, and others are moved by other things. Now the following is approximately how they must have reasoned to be of the opinion that these objects are goods. All the enjoyable savors that please us at feasts, the sounds that delight the ear, and the other pleasures we occasionally experience are no doubt contained in sensible objects; or these objects at least make us aware of them, and without their means we cannot enjoy these things. Now, it cannot be doubted that pleasure is good and pain bad; of this we are inwardly convinced, and, consequently, the objects of our passions are genuine goods to which we should be dedicated in order to be happy.

That is the argument we ordinarily employ almost unconsciously. Thus, because we believe our sensations to be in objects, or objects to have in themselves the power of making us sense them, we take as our goods things that we are infinitely above, things that can act only on our bodies[a] and produce motion in their fibers, but that can never act on our souls or make us feel pleasure or pain.

II. That only God is our good, and that no sensible object can make us feel pleasure.

Certainly, if it is not our soul that acts on itself according to what takes place in the body, only God can have this power. And if the soul does not cause its own

[a] I shall explain in the last book the sense in which objects act on the body.

pleasure and pain as changes occur in the disturbances in its body's fibers, as is apparently the case,[a] since it feels pleasure and pain involuntarily, I know of no hand strong enough to make it feel them other than that of the Author of Nature.

Indeed, only God is our true good. Only He can fill us with all the pleasures of which we are capable. He has decided to make us experience them only in knowledge and love of Him, while those He has attached to the motion taking place in our body, so that we should care for its preservation, are weak and fleeting, though in the state to which sin has reduced us, we are like its slaves. But the pleasures He makes available to the elect in heaven are infinitely greater, since He made us to know and love Him. For, given that order requires that we feel greater pleasure when we possess greater goods, the pleasure of those who possess God will certainly surpass all others, since He is infinitely above all things.

III. The source of the errors of the Stoics and Epicureans.

What we have just said about the cause of our errors with regard to good also reveals the falsity of the Stoics' and Epicureans' positions concerning the sovereign good. The Epicureans located it in pleasure, and because pleasure is experienced in vice as well as in virtue, and even more commonly in the former than in the latter, it is generally held that they abandoned themselves to every sort of sensual delight.

Now the first cause of their error is that because they falsely judged that there was something pleasurable in the objects of their senses, or that these objects were the true causes of what they felt, and because they were convinced through their inner sensation of themselves that pleasure was a good for them at least as long as they enjoyed it, they abandoned themselves to every passion with no thought to the unhappy consequences they would suffer as a result. Instead they should have reckoned that the pleasure experienced in sensible things cannot be in these things as their true cause, or in any other way, and consequently, that sensible goods cannot be goods with regard to our soul; <they also should have considered> the other things we have explained.

The Stoics, who were of the contrary opinion that sensible pleasures are in and for the body only, and that the soul must have its own good, placed happiness in virtue. Here is the source of their errors.

That source is their belief that sensible pleasure and pain are not in the soul but only in the body. This false judgment then serves them as a premise for other false conclusions: e.g., that pain is not an evil, nor pleasure a good; that the pleasures of senses are not good in themselves; that they are had by both man and beast, and so forth. Yet though the Stoics and Epicureans were wrong on many counts, they were clearly right about some things. For the happiness of the blessed [*le bonheur des bienheureux*] consists only in perfect virtue, i.e., in knowledge and love of God, and in a delicate pleasure that always attends them.

Let us keep in mind, then, (a) that external objects contain nothing either enjoyable or disagreeable; (b) that they are not the causes of our pleasures; (c) that we have reason neither to embrace nor fear them; but (d) that only God should be loved and feared, as only He is powerful enough to punish and reward us and to make us feel pleasure and pain; and finally, (e) that only in and from God should we hope for the pleasures for which we have so strong, so natural, and so appropriate an inclination.

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[a] See bk. 3, ch. 1, no. 3.

BOOK ONE: THE SENSES
Chapter Eighteen

I. That our senses lead us into error even about things that are not sensible. II. An example taken from men's conversation. III. That we should not be concerned with external manners.

Our senses deceive us not only with regard to their objects, such as light, colors, and the other sensible qualities; they [*also*] mislead us about objects beyond their scope by preventing us from considering them carefully enough to make a well-founded judgment. This matter needs to be explained.

I. That our senses lead us into error even about things that are not sensible.

The mind's attention and application to our clear and distinct ideas of objects is the most necessary thing in the world for discovering what they really are. For just as the beauty of a work cannot be seen without opening the eyes and contemplating it, so the mind cannot clearly see most things with their relations to one another unless it considers them attentively. Now, certainly nothing distracts our attention to clear and distinct ideas more than our own senses; and as a result, nothing removes us further from the truth and so quickly throws us into error.

To fully understand this truth, it is absolutely necessary to know that the three ways in which the soul perceives, namely, by the senses, the imagination, and the mind, do not affect it equally, and that as a result, it does not pay equal attention to what it perceives by means of each of them. It attends greatly to what affects it greatly, and little to what affects it little.

Now, what it perceives by the senses affects and stirs it greatly. What it knows through the imagination affects it much less. But what the understanding represents to it, i.e., what it perceives by itself, or independently of the senses and the imagination, hardly stirs it at all. Nobody can doubt but that the least sensuous pain is more present to the mind and occupies it more than meditation upon something of much greater consequence.

The reason for this is that the senses represent objects as present, and the imagination represents them only as absent. Now, it is fitting that of several goods or evils proposed to the soul, those present should affect and occupy it more than absent ones, because the soul must decide quickly what it should do about them. Thus, the soul is more occupied with a simple pinprick than with lofty speculations, and the ills and pleasures of this world impress it more than the terrible pains or inifinite pleasures of eternity.

Thus, the senses harness the soul to what they represent to it. Now, as the soul is limited and cannot clearly conceive many things simultaneously, it cannot clearly perceive what the understanding represents to it at the same time that the senses present something for it to consider. It then abandons the clear and distinct ideas of the understanding (though suited to discovering the truth of things in themselves) and attends only to the confused ideas of the senses, which greatly affect it, but which do not represent things to it according to what they are in themselves but only according to their relation to the body.

II. An example drawn from men's conversation.

If, for example, someone wishes to explain some truth, he must use words and explain his inner sensations and inclinations with behavior perceptible to the senses. Now, the soul cannot distinctly perceive several things at the same time. Thus diverted by what comes to it through the senses, the soul pays hardly any attention to the rational considerations it hears. But it is occupied a great deal by the sensible pleasure it receives from the vocal cadence, gesticulation, pleasant mien, and general deportment of the speaker. Yet after it has listened, the soul usually wants to judge. Thus, its judgments must be different according to the diversity of the impressions it has received through the senses.

If, for example, the speaker expresses himself with facility, and speaks with a pleasant cadence, if he has the mien of an honest and intelligent man, if he is a person of quality and is followed by a great entourage, if he speaks with authority and seriousness and if others listen to him in respectful silence, if he has some reputation and contacts with minds of the first rank, in a word, if he is lucky enough to be pleasing, or to be held in esteem, he will be right in everything he proposes, and everything about him, even his collar and cuffs, will prove something.

But if he is unlucky enough to have the contrary qualities, his most elegant demonstrations will never prove anything. Let him utter the most beautiful things in the world and he will go unnoticed. With his listeners' attention directed only to what affects the senses, their distaste in seeing such an ill-formed man will distract them entirely and disrupt the attention they should be giving to his thoughts. The dirty and ragged collar casts suspicion on him who wears it and on everything coming from him. His philosophical or reflective manner of speaking will cause ordinary men, incapable of lofty and sublime thoughts, to treat them as extravagances and dreams.

There we have the judgments of men. Their eyes and ears make judgments about the truth, and not their reason, even in matters that depend only on reason, because men attend only to perceptible and agreeable manners, and pay hardly any close and serious attention to discovering the truth.

III. That we should not be concerned with pleasing external manners.

What is more inordinate than to judge things according to external character, and to despise the truth because it does not come arrayed in a garb that pleases us and flatters our senses? Philosophers and anyone who has any intellectual pride should be ashamed to look for these pleasing manners more solicitously than for the truth itself, and to imbue the mind with the emptiness of words rather than the solidity of things. It is the lot of mankind, and of flesh and blood souls, to be won by measured cadences and by looks and gestures that arouse the passions.

> Omnia enim stolidi magis admirantur, amantque.
> Inversis quae sub verbis latitantia cernunt.
> Veraquae constituunt, quae belle tangere possunt
> Aures, & lepido quae sunt fucata sonore.

But wise men try to defend themselves against the powerful charms of external manners. The senses afflict them as much as other men (for they are indeed men), but they scorn the reports the senses make to them. They follow the famous example of the judges of the Areopagus who strictly prohibited their advocates from employing these misleading words and rhetorical devices and who listened to them only in darkness, lest the pleasure of their words and gestures should persuade them of something contrary to truth and justice, and so that they might be better able to apply themselves to the soundness of their arguments.

BOOK ONE: THE SENSES
Chapter Nineteen

Two other examples. I. The first: of our errors concerning the nature of bodies. II. The second: of the errors pertaining to the qualities of these bodies.

Most of our errors clearly have as their main cause the soul's rapt attention to the deliverances of the senses and its indifference toward what is represented to it by the pure understanding. An example of this, drawn from our way of conversing, which is of great importance for morals, has just been given. Here are still others, taken from our relations with the rest of nature, which must be recognized for the success of physics.

I. Errors concerning the nature of bodies.

One of the main errors we fall into in physics is to imagine that there is more substance in bodies that are more perceptible than in those that are hardly perceptible at all. Most people believe that there is more matter in gold or lead than in air or water, and children, who have not noticed its effects through their senses, generally even think that air is not something real.

Gold and lead are very heavy, very hard, and very perceptible; water and air, on the contrary, are hardly perceptible. From this men conclude that the former have more reality than the latter, or that there is more matter in a cubic foot of gold than in a cubic foot of air or of invisible matter. They judge the truth of things by sense impressions, which always deceive us, and they ignore the mind's clear and distinct ideas, which never deceive us, because the sensible affects and stirs us while the intelligible lulls us to sleep. These erroneous judgments pertain to the substance of bodies; the following, to their qualities.

II. Errors concerning their qualities and perfections.

Men almost always judge that the objects exciting the most pleasant sensations in them are the purest and most perfect—without knowing what the perfection and purity of matter consists in, and without worrying themselves about it.

They say, for example, that mud is impure and that water is pure and clear. But camels, who like muddy water, and animals that enjoy themselves in mud would be of a different opinion. These are beasts, it is true. But people who like woodcock intestines and who savor stone marten droppings do not mention the impurity of these things, though they point it out in the excrement of all other animals. Finally, musk and amber are highly regarded by everyone, even by those who think they are only excrement.

Certainly the perfection and purity of matter is judged only in relation to our senses, and as a result (given that everyone's senses differ, as has been sufficiently explained), everyone's judgments about the perfection and purity of matter must differ a great deal. Thus, the books that men write daily on the imaginary perfections they attribute to certain bodies are of necessity filled with errors of an altogether strange sort, since the arguments they contain are based only on the false, confused, and erratic ideas of our senses.

Philosophers should refrain from saying that matter is *pure* or *impure* unless they know exactly what they mean by these words, for one should never speak without knowing what one is saying, i.e., without having distinct ideas corresponding to the terms one is employing. Now, had they affixed clear and distinct ideas to both these words, they would see that what they call pure is often quite impure, and what seems to them impure is often quite pure.

If, for example, they would have it that matter whose parts are least solid and most mobile is the purest and most perfect, then gold, silver, and precious stones would be extremely imperfect bodies, whereas air and fire, on the other hand, would be very perfect. When flesh has started to corrupt and smell bad, that would mean it had begun to perfect itself, and fetid carrion would be a body more perfect than ordinary flesh.

But if, on the other hand, they would have it that the most perfect bodies are those whose parts are largest, most solid, and least mobile, earth would be more perfect than gold, and air and fire would be the most imperfect bodies.

If, however, the clear ideas I just mentioned are not to be attached to the terms *pure* and *perfect*, others may be substituted in their place. But if the attempt is made to define these words through sensible notions only, everything will forever be confused, since the meaning of the terms expressing them will never be fixed. Everyone has different sensations of the same object, as has already been proved; therefore, if unintelligible speech and general confusion are to be avoided, these objects should not be defined through the sensations had of them.

In the final analysis, however, I do not see that any matter, even if it be the matter of the heavens, would contain more perfection in itself than any other. All matter seems capable only of figure and motion, and the regularity of its figure and motion is a matter of indifference to it. Reason does not tell us that the sun is more luminous and more perfect than mud, or that the creations of our novelists and poets are any better than the most decomposed cadavers. It is our false and deceiving senses that tell us so. Protest here is useless—all railing and exclaiming will seem empty and trivial to those who have carefully examined the arguments presented here.

Those capable only of sensation believe the sun to be filled with light, but those capable of both sensation and reasoning, given that they can reason as well as they can sense, do not believe so. I am firmly convinced that even those who defer most to the testimony of their senses would agree with my view if they had meditated on the things I have said. But they are too fond of the illusions of their senses, they have yielded for too long to their prejudices, and their soul has been too much ignored for them to realize that all the perfections their soul fancies it sees in bodies in fact belong to itself.

It is not to these people I am speaking—I worry little about their praise or approval—for they who are unwilling to listen cannot be good judges. It is enough to defend the truth and gain the approval of those who earnestly labor to free themselves from the errors of their senses and to make good use of their mind's lights. These people are asked only to meditate on these thoughts as carefully as they can and then to judge, either to approve or reject them. They are called upon to judge because, by their meditation, they have acquired the right of life and death over them, which cannot be denied them without injustice.

BOOK ONE: THE SENSES
Chapter Twenty

Conclusions of the first book. I. That our senses are given to us only for the sake of our body. II. That what they report to us must be doubted. III. That knowing how to doubt properly is no small matter.

I think we have adequately covered the general errors our senses lead us into, whether with regard to their own objects or with regard to things perceived only with the understanding. I think that there is no error we fall into while following them whose cause cannot be learned from what has been said here, provided we meditate on them a little.

I. That our senses are given to us only for the preservation of our body.

We have also seen (a) that our senses are accurate and precise for informing us about the relations our body has with all the bodies surrounding it, but that they cannot tell us what these bodies are in themselves; (b) that their proper use is only to preserve its life and health; and (c) that they are to be thoroughly rejected when they attempt to dominate the mind. The chief result I want from the entire first book is a clear understanding that our senses are given to us only for the preservation of our body, that this thought be a strengthening one, and that in order to escape ignorance, help other than that provided by the senses be sought.

II. That the reports they make to us must be doubted.

But if there are people, as undoubtedly there will be only too many, who are not convinced of these last propositions by what has been said up to now, even less is asked of them. It is enough that they cast some suspicion on their senses; and if they cannot entirely reject their testimony as false and deceptive, they are asked only to genuinely doubt that their testimony is altogether true.

And it really seems to me that enough has been said to generate at least some misgiving in the mind of reasonable people and consequently to move them to employ their freedom in a way other than they have done until now. For if they can entertain any doubt at all that the testimony of their senses is true, they will more easily withhold their consent and thus avoid falling into their former errors, particularly if they bear in mind the rule at the beginning of this treatise: *That complete consent should be given only to things that appear altogether clear, and from which we cannot withhold consent without realizing with complete certainty that we would misuse our freedom in not granting it.*

III. That knowing how to doubt properly is no trifle.

Moreover, let no one think he has progressed but little if he has only learned to doubt. Knowing how to doubt reasonably for good cause is not so small a thing as one may think. It should be noted here that there is doubting and then there is doubting. There are doubts springing from passion and stupidity, from blindness and malice, or simply from caprice and the will to doubt. But one may also doubt from caution and distrust, from wisdom and intellectual insight. The Academic <skeptics'> and atheists' doubt is of the former kind, true philosophers' of the latter. The former is a doubt of darkness, never leading toward, but always away from, light. The latter is generated by light and in turn helps to some extent in producing light.

Those who doubt only in the first way do not understand what it is to doubt reasonably. They scoff at Descartes's instructions for doubting in the first of his metaphysical meditations, because they believe that there is only capricious doubt, that by and large all that can be said is that our nature is infirm, that our mind is replete with blindness, that great care must be taken to get rid of its prejudices, and other such things. They think this is enough to avoid seduction by the senses as well as all error. But it is not enough to say that the mind is weak; it must be made aware of its weaknesses. It is not enough to say it is subject to error; the nature of its errors must be pointed out to it. We believe we have begun to do this in the first book by explaining the nature of our senses and their errors, and we are going to follow the same plan by explaining the nature of the imagination and its errors in the second book.

BOOK TWO

PART ONE: THE IMAGINATION

Chapter One

I. The general idea of the imagination. II. Two faculties in the imagination, one active, the other passive. III. General cause of the changes that occur in the imagination, and the foundation of this second book.

In the preceding book we discussed the senses. We tried to explain their nature, and to determine precisely what use ought to be made of them. We revealed the chief and most general errors into which they lead us, and tried to limit their power in such a way that we should expect very much and fear nothing from them, if we always keep them within their prescribed borders. In this second book we shall discuss the imagination, as the natural progression of things obliges us to do, for there is such a close relationship between the senses and the imagination that they should not be separated. We shall even see that the difference between these two faculties is but one of degree.

This is the order we observe in this treatise: it is divided into three parts. In the first the physical causes of disorders and errors of the imagination are explained. In the second some of the most general errors of the imagination are explained in terms of these causes, and we shall also speak of what might be called moral causes of these errors. In the third part we speak about the contagious communication of strong imaginations.

If most things contained in this treatise are not as novel as what has already been presented in explaining the errors of the senses, they will be no less useful. Enlightened persons are very aware of the errors and even the causes of the errors of which I treat; but there are very few who give it enough reflection. I do not claim to teach everyone: I teach the ignorant, and merely advise the rest, or rather, in this work I try both to teach and advise myself.

I. The general idea of the imagination.

We have said in the first book that our sense organs are composed of tiny fibers that on the one hand terminate in the external parts of the body and skin, and on the other lead toward the center of the brain. Now, these tiny fibers can be moved in two ways, either beginning with the ends in the brain, or with those outside. The agitation of these tiny fibers cannot be communicated to the brain without the soul perceiving something. If the agitation originates through the impressions made by objects on the exterior surface of our nerve fibers and is communicated to the brain, then the soul senses, and it judges[a] that what it senses is outside, i.e., it perceives an object as present. But if the internal fibers alone are lightly disturbed by the flow of animal spirits, or in some other way, then the soul imagines, and judges that what it imagines is not outside, but inside the brain, i.e., it perceives an object as absent. This is the difference between sensing and imagining.

But it should be noted that the fibers of the brain are agitated much more by the impressions of objects than by the flow of spirits. And this is why the soul is much more influenced by external objects that it judges as present and capable of making it feel pleasure and pain than it is by the flow of animal spirits. However, it sometimes happens that persons whose animal spirits are highly agitated by fasting, vigils, a high fever, or some violent passion have the internal fibers of their brains set in motion as forcefully as by external objects. Because of this such people *sense* what they should only *imagine*, and they think they see objects before their eyes, which are only in their imaginations. This shows that with regard to what occurs in the body, the senses and the imagination differ only in degree, as I have just suggested.

But in order to give a more distinct and particular idea of the imagination, it is necessary to understand that every time a change occurs in the part of the brain in which the nerves terminate, changes also occur in the soul. That is, as we have already explained, if any movement of the spirits occurs in this part, which slightly changes the order of its fibers, a new perception occurs in the soul also; it senses necessarily, or it imagines something anew; and the soul can never sense anything or imagine anything anew unless there is some change in the fibers of this same part of the brain.

So the faculty of imagining, or the imagination, consists only in the soul's power of forming images of objects producing changes in the fibers of that part of the brain which can be called the *principal* part, because it corresponds to all the parts of our body, and is the place where the soul immediately resides, if one may so speak.

II. Two faculties in the imagination, one active, the other passive.

That shows clearly that this power of the soul to form images includes two things, one depending upon the soul itself, the other upon the body. The first is the action and the command of the will. The second is the obedience rendered to it by the animal spirits that trace these images, and by the brain fibers on which they must be imprinted. In this work we shall call both of these things indifferently by the word *imagination*, and we shall not distinguish them by the words *active* and *passive*, which we might well assign to them. This distinction will not be made because it will be sufficiently clear from the context whether one intends to speak of the *active imagination* of the soul or the *passive imagination* of the body.

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[a] By a natural judgment, of which I have frequently spoken in the preceding book.

Further, we shall not determine in particular what that *principal* part of the brain is of which I have just spoken, first, because I believe it would serve no purpose; second, because it is very uncertain; and finally, because I believe it would be better to say nothing about it, even if I were quite certain what the principal part is, for I could not convince others since this is not a fact that can be proved here.

Whether the common sense resides, as Willis would have it, in the two tiny bodies that he calls *corpora striata,* while the sinuosities of the brain preserve the species of the memory and the *corpus callosum* is the seat of the imagination; or whether, following the opinion of Fernel, in the *pia mater*, which encloses the substance of the brain; whether it be in the *pineal gland* of Descartes; or finally in some other portion hitherto unknown, that our soul exercises its principal functions, does not trouble us much here. It suffices that there is a principal part and this is absolutely necessary just as the Cartesian system remains basically intact. For it must be noted that even when he is mistaken, as seems probable when he assures us that it is to the *pineal gland* that the soul is immediately united, this nevertheless could not basically invalidate his system, from which we shall always draw all the utility that can be expected from the true, in order to advance in the knowledge of man.

III. General cause of the changes that occur in the imagination, and the foundation of this second book.

Since the imagination consists only in the soul's power to form images of objects by imprinting them, so to speak, in the fibers of its brain, the greater and more distinct the traces of the animal spirits, which are the strokes of these images, the more strongly and distinctly the soul will imagine these objects. Now, just as the breadth, depth, and clarity of the strokes of an engraving depend upon the pressure applied to the burin, and the pliancy of the copper, so the depth and clarity of the traces in the imagination depend upon the pressure of the animal spirits, and upon the constitution of the brain fibers. And it is the variety found in these two things that constitutes nearly all the great diversity observed among minds.

For it is easy enough to explain all the different characters encountered among the minds of men, on the one hand by the abundance and scarcity, by the rapidity or slowness of agitation, and by the density or lightness of the animal spirits, and on the other hand by the delicacy or coarseness, the moistness and dryness, and the malleability of the brain fibers; and finally, by the relation the animal spirits might have to these fibers. And it would be quite appropriate if everyone would try at the outset to imagine all the different combinations of these things, and if they themselves would apply them to all the differences we notice among minds. For it is always more fruitful and even more agreeable to use one's own mind, training it to discover truth by itself, than to leave it to stagnate in idleness by applying it only to things already completely digested and worked out. Besides, differences among minds are so delicate and fine that we can sometimes easily discover and sense them ourselves, while being unable either to represent them to others, or to make others aware of them.

But in order to explain all these differences among minds as completely as I can, and in order that everyone be able to note the cause of all these changes within themselves more easily, it seems appropriate to examine in general the causes of the changes that occur in the animal spirits and in the brain fibers, because in so doing we shall discover all those found in the imagination.

Man never remains the same for very long; everyone has sufficient inner evidence of his changeability. At one moment we judge in one way, the next in another, on the same subject. Briefly, man's life consists only in the circulation of the blood, and in another circulation of his thoughts and desires. And it seems we can hardly use our time better than in seeking the causes of these changes that happen to us, thereby learning to know ourselves.

BOOK TWO: PART ONE

Chapter Two

I. The animal spirits and the general changes to which they are subject. II. That the chyle goes into the heart and brings about changes in the spirits. III. That wine does the same.

<I. *The animal spirits and the general changes to which they are subject.*>

Everyone agrees that the animal spirits are merely the most refined and agitated parts of the blood, which is refined and agitated principally by fermentation and by the vigorous movement of the muscles constituting the heart; and that these spirits are conducted, with the rest of the blood, through the arteries to the brain, and that there they are separated from it by some parts intended for that purpose, concerning which there is no agreement at all.

It must be concluded from this that if the blood is very refined, there will be abundant animal spirits in the brain, whereas if it is coarser, there will be only a little; if the blood is composed of particles that are very easily inflamed in the heart, or well adapted to movement, the spirits in the brain will be extremely heated or agitated; that if, on the contrary, the blood is not sufficiently fermented, the animal spirits will languish, inactive and powerless; and finally, that, depending on the stability of the blood particles, the animal spirits will be more or less stable themselves, and as a result, move more or less forcefully. But we must explain all these things at greater length, using examples and indisputable experiments, in order to show their truth more perceptibly.

II. That the chyle goes to the heart, causing changes in the spirits.

The authority of the ancients has not only blinded some people's minds, but it might even be said to have closed their eyes. For there are still some persons so respectful of ancient opinions, or perhaps so opinionated, that they do not want to see things that they could no longer contradict if they would only open their eyes. One sees people every day who are very esteemed for their speech and learning, who write books and argue publicly against the obvious and sensible experiments for the circulation of the blood, against the evidence for the weight and the elastic force of air, and other similar things. M. Pecquet's recent discovery, which is needed here, is among those lacking only the good fortune to have been born quite aged, with a venerable beard, so to speak. However, I shall not hesitate to use it, and I have no fear that it will give judicious people any reason to complain.

According to this discovery, it is established that the chyle does not go immediately from the viscera to the liver through the *mesaraic* veins, as the ancients thought, but through the lacteal veins from the bowels, and thence into certain resevoirs where all these veins terminate. From there, it ascends through the *thoracic canal* along the vertabrae of the spine, and becomes mixed with the blood in the *axillary* vein, which enters into the superior trunk of the vena cava, and, being thus mixed with the blood, it returns to the heart.

It must be concluded from this experiment that, since the blood mixed with the chyle is very different from other blood already circulated several times by the heart, the animal spirits, which are only its most refined parts, should also be very different in people whose stomachs are empty and in those who have just eaten. Moreover, because infinitely many kinds of food and drink are used, and also because the bodies of those who use them are differently disposed, two people who have just eaten at the same table are bound to sense an indescribable variety of changes in their faculties of imagination.

It is true that those who enjoy perfect health digest so easily that the chyle going into their heart and from there to their brain is as suitable to forming spirits as is ordinary blood. It hardly either increases or diminishes the heat there, and the blood continues to ferment in just the same way. Accordingly, their animal spirits, and consequently their faculty of imagination, hardly change. But the elderly and the infirm note very obvious changes in themselves after eating. Nearly all of them become sleepy, or at least their imaginations become quite languid, neither alert nor quick. They conceive nothing distinctly, and cannot apply themselves to anything. In a word, they are quite different than they were beforehand.

III. That wine does the same.

But in order for the healthier and more robust also to have sensible proof of what has just been said, they need only reflect upon what happens to them when they have drunk more wine than usual, or upon what will happen to them if they drink only wine at one meal and only water at another. For we can be assured that unless they are stupid, or their bodies are composed in some quite extraordinary way, they will immediately feel some gaiety, or slight drowsiness, or some other similar accident.

Wine is so spiritous that it is almost fully formed animal spirits, but libertine spirits, which do not voluntarily submit to the commands of the will, apparently because they are so easily moved. Thus, even in the strongest and most vigorous men, it produces greater changes in the imagination and in all parts of the body than do food and other beverages. It "trips us up," to speak with Plautus,[a] and produces many effects in the mind less advantageous than those Horace describes in these lines:

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[a] "Vinum luctator dolosus est."

> Quid non ebrietas designat; operta recludit:
> Spes jubet esse ratas: in praelia trudit inermem:
> Sollicitis animis onus eximit: addocet artes.
> Faecundi calices quem non fecere disertum?
> Contracta quem non in paupertate solutum?

It would be easy enough to find very probable reasons for the principal effects that the mixing of the chyle with the blood produces in the animal spirits, and then in the brain and the soul itself, such as why wine cheers us, why it gives the mind a certain vivacity when taken in moderation, but brutalizes it after a while if taken in excess, why one is sleepy after eating, and of many other similar things, for which quite ridiculous reasons are ordinarily given. But aside from the fact that I am not doing anatomy here, it would be necessary for an adequate explanation of such events to give some idea of the structure of the brain, or to make certain hypotheses or suppositions as Descartes has done in his treatise *De l'homme,* without which it is impossible to explain what I mean. Besides, if you read Descarte's treatise attentively, you will perhaps be satisfied on all these questions because of the indications he gives for their resolution.

BOOK TWO: PART ONE

Chapter Three

That the air we breathe also causes some change in the spirits.

The second general cause of the changes that occur in the animal spirits is the air we breathe. For although it does not immediately cause such sensible impressions as the chyle in the long run, it still produces the same effects as do the juices of food in a short time. This air enters the branches of the *arteria venosa*[a] from the trachea artery; from there it ferments and mixes with the rest of the blood in the heart, and, according to its particular disposition and that of the blood, it produces great changes in the animal spirits and consequently in the faculty of imagining.

I know some people do not believe that air mixes with the blood in the lungs and heart, because they cannot discover with their eyes the passages in the branches of the tracheal artery and in the arteria venosa through which this air travels. But the action of the mind need not stop with that of the senses: it can penetrate what is impenetrable to them, and grasp things that have no grip for the senses. There is no doubt that some blood continually passes through the branches of the *arterial vein*[b] into those of the tracheal artery: the odor and moisture of the breath is sufficient proof of this; and yet the passages for this communication are imperceptible. Why then can the particles of refined air not pass through the branches of the tracheal artery into the arteria venosa, even if the passages for this communication be visible? Finally, many more humors leave the body through the imperceptible pores of the arteries and skin than leave through the other passages of the body, and even the most solid metals do not have such constricted pores that there are no natural bodies small enough to pass freely through them, since otherwise these pores would be closed.

It is true that the coarser and rougher particles of air cannot pass through the ordinary pores of the bodies, and that even water, though very coarse, can slide through openings where this air is forced to stop. But at this point we are not discussing these coarsest air particles: they seem to be rather useless for fermentation. We are only considering the smaller, firmer, pungent ones, having very few appendages which can impede them, because these are apparently the most suited to fermentation of the blood.

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[a] The vein of the lungs.

[b] The artery of the lungs.

However, I could affirm the report of Silvius that even the coarsest air passes from the tracheal artery into the heart, since he himself assures us that he saw its passage through the ingenuity of M. de Swammerdam. For it is more reasonable to believe one man who claims to have seen, than idle talk of a million others. Thus, it is certain that the most refined air particles we breathe enter our hearts; that together with the blood and the chyle there, they maintain the heat that gives life and movement to our body, and that, according to their varying qualities, they cause great changes in the fermentation of the blood and in the animal spirits.

We recognize these facts every day through the various humors and mental characteristics of persons of different countries. The Gascons, for example, have a much more lively imagination than the Normans. The people of Rouen, Dieppe, and Picardy, are all different from each other: and they all differ even more from the Low Normans, although they are all quite similar to one another. But if we consider the people of more remote lands, we shall encounter even stranger differences, as between an Italian and a Fleming or a Dutchman.

And finally, there are places renowned throughout history for the wisdom of their inhabitants, such as Theman and Athens, and others known for their stupidity, such as Thebes, Abdera, and some others.[a]

''Athenis tenus coelum, ex quo acuitiores etiam putantur Attici, crassum Thebis.'' Cic. *De fato*. [4. 5]

''Abderitanae pectora plebis habes.'' Mart. [Epig. 5. 25. 4]

''Boetum in crasso jurares aere natum.'' Hor., [Epist. 2. 1. 144].

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[a] ''Nunquid non ultra est sapientia in Theman.'' Jer. 49:17.

BOOK TWO: PART ONE

Chapter Four

I. The changes in the spirits caused by the nerves that go to the heart and lungs. II. Those caused by the nerves that go to the liver, spleen, and viscera. III. That all these changes occur without our willing them, but that they could not occur without a Providence.

The third cause of the changes occurring in the animal spirits is the most common and the most activating of all, because it is what produces, maintains, and fortifies all the passions. In order to understand this well, it is essential to know that the fifth, sixth, and eighth pair of nerves send most of their branches into the chest and abdomen, where they serve purposes very useful for the preservation of the body but extremely dangerous for the soul. This is because these nerves are not at all dependent in their action upon the will of man, as are those used to move the arms, legs, and other external parts of the body, and because they act upon the soul much more than the soul acts upon them.

I. The change in the spirits caused by the nerves that go to the heart and lungs.

It is necessary to understand that many branches of the eighth pair of nerves work their way in among the fibers of the most important of all the muscles, the heart: that they surround its openings, its auricles, and its arteries; that they even spread into the substance of the lungs, and so through their different motions produce very considerable changes in the blood. For the nerves spread among the fibers of the heart sometimes make it expand and contract too forcefully and rapidly, thus violently pushing an extraordinary quantity of blood toward the head and all the exterior parts of the body. And occasionally these same nerves produce just the opposite effect. As for the nerves around the openings, auricles, and arteries of the heart, they have almost the same effect as the registers with which chemists control the heat of their furnaces, or the taps used in fountains to regulate the flow of water. For the purpose of these nerves is alternately to contract and enlarge the openings of the heart, thus hastening or slowing the entrance or exit of the blood, thereby increasing or decreasing its heat. Finally, the nerves spread throughout the lungs clearly have the same purpose, because the lungs are composed only of the branches of the tracheal artery, the vena arteriosa, and the arteria venosa, interlaced with each other, it is clear that by their contraction the nerves throughout the substance of the lungs must obstruct the free passage of air from the branches of the tracheal artery as well as the passage of blood from the branches of the vena arteriosa to the arteria venosa, in order to flow into the heart. Thus, these nerves, according to their different movements, increase or decrease the heat and movement of the blood.

In all our passions we have very perceptible experiences of these different degrees of heat in our hearts. We feel it diminish perceptibly, and sometimes increase suddenly. And as we falsely judge that our sensations are in the parts of our bodies, on the occasions when they are excited in our souls, as has been explained in the first book, almost all philosophers imagine that the heart is the principal seat of the passions of the soul, and even today this is the most common opinion.

Now, because the imagination receives great changes through those that happen to the animal spirits, and because the animal spirits are quite different, according to the different fermentation or agitation of the blood occurring in the heart, it is easy to understand how the same things can be imagined quite differently by impassioned persons on the one hand, and those who consider them in cold blood on the other.

II. The change in the spirits caused by the nerves that go to the liver, spleen, and the other viscera.

The other cause that contributes greatly to diminishing or increasing these extraordinary fermentations of the blood consists in the action of many other branches of the nerves.

These branches spread to the *liver*, which contains the most refined part of the blood, normally called bile, to the *spleen,* which contains the most coarse or melancholy part of the blood, to the *pancreas*, which contains an acidic fluid very suitable, it seems, for fermentation, to the stomach, the bowels and the other parts that contain the chyle. In sum, they spread to all parts of the body that can influence the variations in the fermentation or motion of the blood. Even the very arteries and veins themselves are linked to these nerves, as Willis has discovered in the case of the lower trunk of the great artery, which is linked to them near the heart, and in the cases of the *axillary* artery on the right side, the *emulgent* vein, and some others.

Thus, the purpose of the nerves being to agitate the parts to which they are attached in various ways, it is easy to conceive how, for example, the nerve surrounding the liver can force a large quantity of bile to flow into the veins by squeezing the liver, and how this bile, being mixed with the blood in the veins and with the chyle in the bile canal enters the heart, where it produces an unusually intense heat. Thus, when one is moved by certain passions, the blood boils in the arteries and veins, intense heat spreads throughout the body, rising to the head, and the head becomes filled with such a large number of overly activated, too lively animal spirits whose impetuous flow obstructs the imagination from representing to itself anything other than the images and impressions that these spirits form in the brain, that is, the imagination is prevented from thinking about any objects other than those of the dominating passion.

It is the same with the little nerves that go to the spleen, or to other parts of the body that contain coarser material, less susceptible to heat and movement; they render the imagination quite languid and dull by releasing some coarse matter that is hard to set in motion.

The purpose of the nerves surrounding the arteries and veins is to squeeze them, impeding the flow of blood, forcing it to flow into places where it finds free passage. Thus, when the portion of the great artery that supplies blood to all the parts below the heart is linked and restricted by these nerves, the blood necessarily enters the head in greater abundance, thereby producing changes in the animal spirits, and consequently in the imagination.

III. That these changes occur independently of our will, through the order of Providence.

Now it should be noted well that all this happens mechanically, that is to say, that all the various movements of these nerves in all the different passions do not occur through any command of the will, but, on the contrary without its orders, and even against them. Accordingly, a body without a soul, composed like that of a healthy man, would be capable of all the movements that accompany the passions to which we are subject; thus beasts can have similar ones, although they are nothing but pure machines.

This is why we are bound to admire the incomprehensible wisdom of the Being who has so well arranged all these forces, that it is sufficient for an object to touch the optic nerve lightly in this or that way to produce so many different movements in the heart, the other interior parts of the body, and even in the face. For it has recently been discovered that the same nerve that extends some of its branches into the heart and other interior parts also has some branches connected to the eyes, the mouth, and other parts of the face. Thus, it is impossible for any passion to arise within that does not seem to be outside, since there can be no movement in the branches that go to the heart without some occurring in those spread throughout the face.

The correspondence and harmony found among the facial nerves and some others answering to other nameless parts of the body is even more remarkable. And what produces this great harmony is, as in all the other passions, that the little nerves that go to the face are still only branches of the one that descends to the lower parts of the body.

When one is surprised by some violent passion, if one is careful to reflect upon what one feels in one's entrails and in the other parts of the body where the nerves are embedded, as well as upon the accompanying changes in one's face, and considers that all these different agitations of our nerves are entirely involuntary, happening even despite all the resistance our will can muster against them, one will have little difficulty letting oneself be convinced of the simple explanation just given, of all these relations among the nerves.

But if one examines the reasons and purpose of all these things, one will find so much order and wisdom that a little serious thought will convince even the most devoted disciplies of Epicurus and Lucretius that there is a providence which rules the world. When I see a watch, I have reason to conclude that there is an intelligence, because it is impossible that chance could produce and arrange all its wheels. How then would it be possible for chance, and the encounter of atoms, to be capable of arranging in all men and in all the animals so many different forces, with the precision and proportion that I have just explained? And how, by chance, could it happen that men and animals procreate other beings that exactly resemble them? Thus, it is simply ridiculous to think or to say with Lucretius that chance formed all the parts that make up a man, that eyes were not made in order to see, but rather that one thinks of seeing because one has eyes, and similarly with the other parts of the body. Here are his words:

Lumina ne facias oculorum clara creatae.
Prospicere ut possimus, et ut proferre viai.
Proceros passus, ideo fastigia posse
Surarum ac seminum pedibus fundata plicari.
Brachia tum porro validis exapta lacertis
Esse, manusque datas utraque ex parte ministras
Ut facere ad vitam possimus, quae foret usus.
Caetera de genere hoc inter quaecumque pretantur
Omnia perversa praepostera sunt ratione
Nil ideo natum est in nostro corpore ut ibi
Possimus, sed quod natum est id procreat usum.

Must he not have a strange aversion to Providence who would voluntarily blind himself from fear of recognizing it, and to make himself insensible to such strong and convincing proofs of it as those which nature gives us? It is true that once one pretends to be a freethinker, or rather a blasphemer, as did the Epicureans, one finds oneself confused as if by shadows and capable of seeing only false glimmerings; he denies the clearest things impudently, while haughtily and magisterially affirming the most false and obscure.

The poet I just quoted can serve as proof of this blindness of freethinkers, for he arrogantly pronounces, with no semblance of truth, upon the most difficult and obscure questions, and it seems he does not perceive even the clearest and most distinct ideas. Citing passages from this author to justify what I say would require too long and bothersome a digression. For although it is permissable to make some reflections that briefly fix the mind's attention upon essential truths, it is never right to make digressions that turn the mind's attention for a considerable time from its principal subject, in order to apply it to things of little importance.

We have just explained the general causes, external as well as internal, which produce changes in the animal spirits and as a result in the imagination. It has been shown that the external ones are the food with which we nourish ourselves and the air we breathe, and that the internal ones consist in the involuntary stimulation of certain nerves. No other general causes are known, and we are sure there are none. So, since the imagination depends upon no other bodily parts than these two things, namely, the animal spirits and the disposition of the brain on which they act, in order to give some knowledge of the imagination we need only expose the different changes that can occur in the substance of the brain. But before examining these changes, it is appropriate to explain the connection between our thoughts and the brain traces, and the reciprocal connection of these traces. It will also be necessary to give some idea of memory and habits, that is, of our capacity for thinking of things of which we have already thought, and of doing things we have already done.

BOOK TWO: PART ONE
Chapter Five

I. The connection of the ideas of the mind with the impressions in the brain. II. The reciprocal connection among these impressions. III. The memory. IV. Habits.

Of all material things, none is more worthy of men's attention than the structure of their bodies and the harmony among all the parts composing it. And of all spiritual things, there is none of which knowledge is more necessary to them than that of their soul and all the relations it indispensably has with God, and naturally with the body.

It is not enough merely to feel, or to have a vague understanding, that the brain traces are linked to each other, and are followed by movement of the animal spirits, that the traces aroused in the brain arouse ideas in the mind, and that the movements excited in the animal spirits excite passions in the will. It is necessary, as far as possible, to understand distinctly the cause of all these different connections, and especially the effects they are capable of producing.

It is necessary to understand the cause, because we must understand that in us which alone is capable of acting, and of making us happy or unhappy; and it is necessary to understand the effects, because we must understand ourselves and the other men with whom we must live as well as we can. Then we shall know how to guide and preserve ourselves in the happiest and most perfect state we can attain, according to the order of nature and the rules of the Gospel. And we shall be able to live with other men, knowing precisely both how to use them for our needs, and how to help them in their miseries.

I do not pretend to explain such a vast and general subject in this chapter. I do not even pretend to do so completely in this entire work. There are many things I do not yet understand, and do not even hope to understand. And there are some I think I know but cannot explain. For there is no mind, however limited, that cannot discover more truth by meditating on it than the most eloquent man in the world could deduce from it.

I. The union of soul and body.

One need not imagine, as do most philosophers, that the mind becomes material when united with the body, and that the body becomes mind when it unites with the mind. The soul is not spread through all parts of the body, in order to give life and movement to it, as the imagination might have it; and the body does not become capable of sensation through its union with the mind, as our false and misleading senses seem to convince us. Each substance remains what it is, and as the soul is incapable of extension and movement, so the body is incapable of sensation and inclinations. The only alliance of mind and body known to us consists in a natural and mutual correspondence of the soul's thoughts with the brain traces, and of the soul's emotions with the movements of the animal spirits.

As soon as the soul receives some new ideas, new traces are imprinted in the brain; and as soon as objects produce new traces, the soul receives new ideas. It is not that it considers these traces, since it has no knowledge of them; nor that these traces include these ideas, for they have no relation to them; nor, finally, that the soul receives its ideas from these traces: for, as we shall explain in the third book, it is inconceivable that the mind receive anything from the body and become more enlightened by turning toward it, as these philosophers claim who would have it that it is by *transformation* to fantasms, or brain traces, *per conversionem ad phantasmata*, that the mind perceives all things. But that all takes place according to the general laws of the union of soul and body, which I shall also explain in the third book.

Likewise as soon as the soul wills that the arm be moved, it is moved, even though the soul does not know what it must do in order to move it; and as soon as the animal spirits are agitated, the soul is affected, even though it might not even know whether there are animal spirits in its body.

When I come to speak of the passions, I shall talk about the connection between the brain traces and the movements of the spirits, and that between the ideas and the emotions of the soul, for all the passions depend on them. Right now, I need only mention the connection between the ideas and the traces, and the connection of the traces with each other.

Three causes of the connection between the ideas and the traces. There are three very important causes of the connection of ideas with traces. The first, and the one the others presuppose, is nature, or the constant and immutable will of the Creator. There is, for example, a natural connection, independent of our will, between the traces producing a tree or a mountain we see and the ideas of tree or mountain, between the traces that produce in our brain the cry of a suffering man or animal and our understanding him to complain, between the expression of a man who threatens or fears us and the ideas of pain, strength, weakness, and even among the feelings of compassion, fear, and courage arising in us.

These natural connections are the strongest of all. They are generally similar in all men, and they are absolutely necessary for the preservation of life. This is why they do not depend at all upon our wills. For, if the connection of ideas with sounds and certain characters is weak, and quite different in different countries, it is because it depends upon the weak and changeable will of men. And the reason why this connection depends upon it is that this connection is not absolutely necessary for living, but only for living as men, who should form a rational society among themselves.

The second cause of the connection of ideas with traces is the *identity* of the times. Our having had certain thoughts at a time when there were some new traces on our brain often suffices to make it impossible for these traces to recur without our having these same thoughts again. If the idea of God is presented to my mind at the same time that my brain has been struck by the sight of the three characters *iah*, or by the sound of this same word, the recurrence of the traces these characters, or their sound, will have produced, will suffice for me to think of God. And I could not think of God without the occurrence in my brain of some confused traces of the characters or sounds that accompanied the thoughts I had of God, because since the brain is never without traces or impressions, it always has those which have some relation to what we are thinking at any given moment, though these traces are often very imperfect and very confused.

The third cause of the connection of ideas and traces, which always assumes the two others, is the will of men. This will is necessary so that the connection of ideas with traces be regulated and accommodated to practice. For if men did not naturally have the inclination to agree among themselves to attach their ideas to sensible signs, not only would this connection of ideas be completely useless for society, it would also be very irregular and very imperfect.

First, because the ideas are not strongly connected to the traces, when the spirits are agitated, they render these traces deep and lasting. Thus, the spirits being agitated only by the passions, if men did not have them for communicating their feelings and sharing in those of others, the precise connection of their ideas to certain traces clearly would be very weak, since they only submit themselves to these precise and regular connections in order to communicate their thoughts.

Second, since repetition of the encounter of the same ideas with the same traces is necessary to form a durable connection, because a first encounter, unaccompanied by a violent movement of the animal spirits, cannot make strong connections, it is clear that if men did not want to agree, the occurrence of these encounters of the same traces would be the greatest coincidence in the world. So the will of men is necessary in order to regulate the connection of the same ideas with the same traces, although this will to agree is not so much an affect of their choice and reason as it is an impression of the Author of nature who made us all for each other, and with very strong inclination to unite spiritually as much as we are in body.

It must be carefully noted here that the connection of ideas that represent spiritual things distinct from us by means of brain traces is not and cannot be natural, and as a result it is or can be different in all men, since it has no other cause than their will and the identity of time, of which I have already spoken. On the other hand, the connection of the ideas of all material things with certain particular traces is natural, and consequently there are certain traces that arouse the same idea in all men. We cannot doubt, for example, that all men have the idea of a square when they see a square, because this connection is natural. But they do not all have the idea of a square when the hear the word *square* because this connection is entirely voluntary. The same thing must be thought concerning all the traces tied to ideas of spiritual things.

But, because the traces with a natural connection to ideas affect and engage the mind, and consequently render it attentive, most men rather easily understand and retain sensible and palpable truths, that is to say, relations among bodies. And on the other hand, because traces with no other connection to the ideas than those the will places there do not strike the mind vividly, all men have difficulty understanding, and even more in retaining, abstract truths, i.e., relations among things that do not come under the imagination. But since these relations are slightly complicated, they seem absolutely incomprehensible, especially to those not accustomed to them, because they have not strengthened the connection of these abstract ideas with their traces through continual meditation. And although others have perfectly understood them, they forget them in a short time, because this connection is almost never as strong as natural ones.

It is so true that all of the difficulty in understanding and retaining spiritual and abstract things comes from the difficulty we have in strengthening the connection between their ideas and the brain traces, that when one finds a way to explain them through their relations with material things, one makes them easily understandable. And they are impressed on the mind in such a way that not only are we firmly convinced of them but they are retained with much greater facility. The general idea of the mind given in the first chapter of this work may be a sufficiently good proof of this.

On the other hand, when we express the relations found among material things in such a way that there is no necessary link between these things and the traces of their expressions, it is much more difficult to understand them, and one easily forgets them.

For example, those who begin the study of algebra or analysis can understand algebraic demonstrations only with great difficulty, and once they have understood them, they do not long remember them. <This is> because, for example, squares, parallelograms, cubes, solids, and so on, being expressed by aa, ab, a^3, abc, and so on, since these traces have no natural connection with their ideas, the mind can find no grip by which it can fasten onto them and examine their relations.

But those who begin the study of common geometry conceive very clearly and quickly the little demonstrations one explains to them, provided they very clearly understand the terms used, because the ideas of square, circle, and so forth, are tied naturally to the traces of the figures they see before their eyes.

It often happens that even a single exposition of the figure used in the demonstration enables them to understand it better than the discourses that explain it. Because the words are connected to the ideas only by an arbitrary convention, they do not arouse these ideas with enough speed and clarity for easy recognition of the relations, and this is the principle cause of difficulty in learning the sciences.

One might in passing recognize through what has just been said that these writers who coin a large number of words and new symbols to explain their opinions often write rather useless works. They think they are making themselves intelligible, when in fact they make themselves incomprehensible. We define all our terms and all our symbols, they say, and others should adapt to them. It is true, the others adapt to them voluntarily, but their nature repels them. Their ideas are not attached to these new terms, because that requires use and more use. The authors may have this practice, but their readers do not. When one claims to instruct the mind, it is necessary to understand it, because it is necessary to follow nature, and neither to irritate nor outrage it.

However, one need not condemn the care mathematicians take in defining their terms, because obviously they must define them to avoid equivocations. But as far as possible, one must use accepted terms or terms whose ordinary signification is not so far removed from what one is claiming to introduce, and this is not always observed in mathematics.

Nor do we mean to condemn algebra by what has just been said, especially as Descartes has restored it. For although the novelty of some expressions in this science initially affords the mind some trouble, there is so little variety and confusion in these expressions—and the help the mind receives from them so far surpasses the difficulty—that one cannot believe it possible to invent a way of reasoning, and expressing its reasonings, that is better suited to the nature of the mind and that can carry it further toward the discovery of unknown truths. The expressions of this science do not exceed the capacity of the mind; they do not tax the memory; they summarize all our ideas and reasonings in a marvelous way, and with practice even render them to some extent sensible. Finally, their utility is very much greater than that of the natural expressions of drawn figures of triangles, squares, and the like, for purposes of searching out and expounding hidden truths. But this is enough discussion of the connection of ideas with brain traces: it is appropriate to say something about the connection of the traces with each other and, consequently, that between the ideas corresponding to these traces.

II. The mutual connection of the traces.

This connection consists in the fact that the brain traces are so well tied to one another than none can be aroused without all those which were imprinted at the same time being aroused. If, for example, a man finds himself in some public ceremony, if he notes all the circumstances and all the principal persons assisting at it, the time, place, day, and all the other particulars, it will suffice for him to remember the place, or even some other less noteworthy circumstance of the ceremony, to have all the others recur to him. This is why, when we do not recall the principal name of a thing, we designate it sufficiently by using a name that signifies some property or circumstance of that thing. For example, if we cannot remember the proper name of a church, we can use another name that signifies something related to it in some way. We could say, it is that church where there was such a crowd, where Father so-and-so preached, where we went on Sunday. And being unable to remember a person's name, or where it is more appropriate to identify him in another way, we can single him out by this pocked face, or as this tall, handsome man, this little hunchback, according to one's inclinations toward him, although of course it is wrong to use words of scorn.

Now the mutual connection of the traces and consequently of the ideas with one another is not only the basis for all rhetorical figures but also for an infinity of other things of greater importance in morality, politics, and generally in all the sciences having some relation to man, and consequently to many things of which I shall speak in the sequel.

The cause of this connection of many traces is the *identity* of the times at which they were imprinted in the brain. For it is enough that many traces were produced at the same time for them all to rise again together. This is because the animal spirits, finding the path of all the traces made at the same time half open, continue on them since it is easier for them to travel those paths than through other parts of the brain. This is the cause of memory and of the bodily habits we share with the beasts.

These connections of the traces are not always joined with the emotions of the spirits, because all the things we see do not always seem good or bad. These connections can also change, and break, because not always being necessary for the preservation of life, they need not always be the same.

But there are traces in our brains that are naturally tied to one another, and even to certain emotions of the spirits, because that *is* necessary to preservation of life; and their connection cannot be broken, or at least cannot easily be broken, because it is good that it be always the same. For example, the trace of a great elevation one sees below oneself, and from which one is in danger of falling, or that of a large body, about to fall on us and crush us, is naturally tied to the one that represents death to us, and to an emotion of the spirit that disposes us to flight and to the desire to flee. This connection never changes, because it is necessary that it be always the same, and it consists in a disposition of the brain fibers that we have from birth.

All the connections that are not natural can be and should be broken, because different circumstances of time and place are bound to change them so that they can be useful to the preservation of life. It is good that partridges, for example, flee from men with guns in places and times they are being hunted, but it is not necessary that they flee at other times and places. Thus, it is necessary for the conservation of all animals that there be certain connections of traces that can easily be formed and destroyed, and that there be others that can be broken only with difficulty, and finally, still others that can never be broken.

It is very useful to seek with care for the different effects that these various connections are capable of producing, because these effects are very numerous and of very great importance for the knowledge of man.

III. Memory.

For the explanation of *memory*, it is sufficient to understand this truth well: That all our different perceptions are attached to the changes occurring in the fibers of the principal part of the brain, where the soul resides more particularly; because assuming this single principle, the nature of memory is explained. For just as the branches of a tree that have remained bent in a certain way for some time preserve a certain facility for being bent anew in the same way, so too our brain fibers, having once received certain impressions through the flow of the animal spirits and by the action of objects, retain some facility for receiving these same dispositions for some time. Now, memory consists only in this facility, since one thinks of the same things when the brain receives the same impressions.

As the animal spirits act sometimes more and sometimes less strongly upon the substance of the brain, and as sensible objects cause much greater impressions than the imagination by itself, it is easy to understand why we do not recall all the things we have perceived equally well. Why, for example, what has been perceived many times is usually presented to the soul more clearly than what has been perceived only one or two times, and why the things one has seen and remembered more distinctly than those one has only imagined, which would explain, for example, why we would understand the distribution of the veins in the liver after seeing a dissection of this organ only once better than after reading it several times in an anatomy book, and so for other similar things.

But if one wishes to reflect upon what was said before about imagination, and upon the little that has just been said about memory, and if one is delivered from the prejudice that our brain is much too small to be able to preserve such large numbers of traces and impressions, then one will have the pleasure of discovering the cause of all these surprising effects of the memory, of which Saint Augustine speaks with so much admiration in the tenth book of his *Confessions*. I do not want to explain these things at greater length here, because I believe it is more appropriate for each man to explain them for himself through an effort of the mind, since the things one discovers by this means are always more agreeable, and moreover make a greater impression upon us than those we learn from others.

IV. Habits.

For the explanation of *habits*, it is necessary to understand the way in which there is reason to think that the soul moves the parts of the body to which it is united, which is this: by all appearances, there are always in some places in the brain, wherever they may be, a very great number of animal spirits, highly agitated by the heat of the heart whence they came. and quite ready to flow into any places where they find an open passage. All the nerves terminate in the reservoir of these spirits, and the soul has the power[a] to determine their movement and to conduct them through these nerves into all the muscles of the body. The spirits, entering the muscles, cause them to swell, and consequently they contract them. Thus, they move the parts of the body to which these muscles are attached.

You will have no difficulty convincing yourself that the soul moves the body in the way I have just explained if you will notice that when someone has gone a long time without eating, will as he might to impart certain motions to his body, he will not be able to do so; indeed, he may even have some difficulty staying on his feet. But if a way is found to make something of a strongly spirituous nature flow into his heart, such as wine or some other comparable substance, he will immediately perceive that the body obeys with much greater facility, and that it can be moved in any way desired. For this single experiment seems to me to show that the soul cannot impart movement to its body without animal spirits, and that it is through them that it recovers its control over the body.

[a] I shall explain the nature of this power shortly [6.2.3 and Elucidation 15].

Now the swelling of the muscles is so visible and sensible in the agitations of our arms and all parts of our bodies, and it is so reasonable to believe that these muscles cannot swell themselves unless some body enters them, just as a balloon cannot be blown up or become inflated unless entered by air or something else, that it seems indubitable that the nerves push the animal spirits from the brain into the muscles to inflate them and to produce in them all the movements we wish to make. For when a muscle is full, it is necessarily shorter than when it is empty, so that it pulls and moves the part to which it is attached, as is explained at greater length in the books on the *Passions* and *Man* by Descartes. Nevertheless, I do not offer this explanation as one that is perfectly demonstrated in every detail. To render it completely clear, many things are to be desired, without which it is almost impossible to achieve clarity. But knowing them is also rather useless to our subject here, because whether this explanation be true or false, it will be equally useful for understanding the nature of habits; if the soul does not move the body in this way at all, it must move it in some other way sufficiently similar to it for drawing the consequences we shall infer from it.

But in order to follow our explanation, it must be noted that the spirits do not always find the paths through which they must flow sufficiently open and free, and this is why, for example, we have difficulty moving our fingers with the speed necessary for playing musical instruments, or in moving the muscles used in pronounciation in order to pronounce the words of a foreign language. But little by little the animal spirits open and smooth these paths by their continual flow, so that in time they find no more resistance. Now it is in this facility the animal spirits have of flowing into the members of our bodies that *habits* consist.

It is very easy according to this explanation to resolve an infinity of questions concerning the habits, as, for example, why children are more capable of acquiring new habits than older persons are; why it is very hard to rid oneself of old habits; why it is that by virtue of speaking, men have acquired such great facility at it that they pronounce their words with incredible speed, even without thinking, as happens only too often to those who recite prayers they have been accustomed to saying for many years. Nonetheless, in order to pronounce but a single word, it is necessary to move many muscles, such as those of the tongue, lips, throat, and diaphragm, all at once, within a certain time, and in a certain order. But one can, with a little meditation, satisfy oneself on these questions, and on many other very curious and rather useful ones, and they need not detain us here.

It is obvious from what has just been said that there is a great similarity between *memory* and *habits*, and that in one sense, the memory may pass for a habit. For just as corporeal habits consist in the facility the spirits have acquired for flowing through certain places in our bodies, so memory consists in the traces the same spirits have imprinted upon the brain, which are the causes of our facility in recalling things to ourselves. Thus, if there were no perceptions attached to the paths of the animal spirits, nor to these traces, there would be no difference between the memory and the other habits.[a] Nor is it any more difficult to conceive that beasts, though without a soul and incapable of any perception can, in their way, recall the things that have made an impression in their brain, than it is to conceive that they are capable of acquiring various habits. And after what I have just said about habits, I do not see much more difficulty in imagining to oneself how the members of their bodies gradually acquire various habits than there is in conceiving why a newly made machine does not run as easily as it does after it has been used for awhile.

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[a] See the Elucidations concerning memory and the spiritual habits [*Eluc.* 7].

BOOK TWO: PART ONE

Chapter Six

I. That brain fibers are not subject to such rapid changes as the spirits. II. Three important changes at the three different ages.

I. That brain fibers are not subject to such rapid changes as the spirits.

All parts of living bodies are continually in motion, the solids and fluids, the flesh as well as the blood. The only differences between the motion of the one and the others is that the motion of the parts of the blood is visible and sensible, whereas that of the fibers of our flesh is completely imperceptible. There is, then, this difference between the animal spirits and the substance of the brain: the animal spirits are highly agitated and fluid, whereas the substance of the brain has some solidity and consistency. Thus, the spirits are divided into tiny particles and are dissipated in a few hours, transpiring through the pores of the vessels containing them, and they are often replaced by others not at all like them. But the brain fibers are not so easy to disperse, they do not often undergo considerable changes, and their entire substance changes only after many years.

II. Three important changes that happen in the three different ages.

The most important differences found in the brain of an individual man throughout the course of his life take place in childhood, at the peak of his growth, and in old age.

In childhood, the brain fibers are soft, flexible, and delicate. With age they become drier, harder, and stronger. But in old age they are completely inflexible, responding to the flow of the animal spirits only with difficulty; they are also thick, and sometimes mixed with superfluous humors that the very low heat of this age can no longer disperse. For just as we see that the fibers that make up flesh harden with time, and that the flesh of a young partridge is without doubt more tender than that of an old bird, so the brain fibers of a child or a young man must be much softer and more delicate than those of persons more advanced in age.

One will understand the reason for these changes if one considers that these fibers are continually agitated by the animal spirits, which flow about them in many different ways. For just as the winds dry the earth over which they blow, so the animal spirits through their continual agitation gradually render most of a man's brain fibers drier, more compressed, and more solid, so that the brain fibers of older persons are almost always less flexible than those of younger persons. And in those of the same age, the drunkard, who over the course of many years has imbibed wine or other intoxicating beverages to excess, must have more solid and inflexible fibers than those who have abstained from these beverages throughout their lives.

Now, the different constitutions of the brain in children, grown men, and the aged are very important causes of the differences that may be noted in the faculty of imagination in these three ages, of which we shall speak in the sequel. Let us begin by examining what happens to the brain of a child in its mother's womb.

BOOK TWO: PART ONE
Chapter Seven

I. The communication between the brain of a mother and that of her child. II. The communication between our brain and other parts of our body, which disposes us toward imitation and compassion. III. Explanation of the generation of monstrous children, and propagation of the species. IV. Explanation of some disorders of mind and some inclinations of the will. V. Concupiscence and Original Sin. VI. Objections and replies.

It is, it seems to me, evident that we are connected to all things and that we have natural relations to all things around us that are very useful for the preservation and convenience of life. But these relations are not all equal. We are much more closely attached to France than to China, to the sun than to some star, to our own house than to our neighbor's. There are invisible ties that bind us much more closely to men than to beasts, to our parents and friends than to strangers, to those upon whom we depend for the preservation of our being than to those from whom we neither fear nor hope for anything.

What is most noteworthy in this natural union between us and other men is that it is greater in proportion as we have greater need of them. Parents and friends are closely bound to each other. It might be said that their pains and sorrows, as well as their pleasures and happiness, are mutual, for all the passions and sentiments of our friends are communicated to us through their conduct, and by the expressions on their faces. But because we can in the absolute sense live without them, the natural union between us and them is not the greatest possible.

I. The communication between the brain of the mother and that of her child.

Infants in their mothers' womb, whose bodies are not yet fully formed and who are, by themselves, in the most extreme state of weakness and need that can be conceived, must also be united with their mother in the closest imaginable way. And although their soul be separated from their mother's, their body is not at all detached from hers, and we should therefore conclude that they have the same sensations and passions, i.e., that exactly the same thoughts are excited in their souls upon the occasion of the motions produced in her body.

Thus, children see what their mothers see, hear the same cries, receive the same impressions from objects, and are aroused by the same passions. For just as the facial expression of an impassioned man penetrates those who look at it, naturally imprinting in them a passion similar to that exciting him, though the union between this man and those considering him be not very intense, thus, it seems to me, there is reason to believe that mothers are capable of imprinting in their unborn children all the same sensations by which they themselves are affected, and all the same passions by which they are agitated. For basically the body of the child is but a part of the mother's body, the blood and spirits are common to both, their sensations and passions are the natural fruits of the movements of the spirits and the blood, and these movements are necessarily communicated from the mother to the child. Thus, the passions and the sensations, and in general all the thoughts of which the body is the occasion, are common to mother and child.

These things seem incontestable to me for many reasons. Consider only that a mother who is very frightened at the sight of a cat begets a child with a horror that surprises him every time this animal is presented to him. It is easy to conclude from this that the child must have seen with the same horror and emotions of spirit what its mother saw when she carried it in her womb, since the sight of a cat that does it no harm still produces in it such strange effects. However, I propose all this only as a hypothesis that, if I am correct, will be sufficiently demonstrated by the following, for any hypothesis that satisfies the test of resolving whatever difficulties can be raised in opposition to it should be accepted as an indisputable principle.

II. The communication between our brain and the parts of our body, which disposes us to imitation and compassion.

The invisible ties with which the Author of nature unites all his works are worthy of God's wisdom and men's admiration. Nothing is at once more surprising or instructive, but we do not notice it. We allow ourselves to be guided without considering what guides us or how it guides us. Nature is hidden from us as well as its Author, and we feel the motions produced in us without considering their sources. However, there are few things more necessary for us to know, for it is on their knowledge that the explanation of all things relating to man depend.

Of course, there are powers in our brain that naturally incline us toward imitation, for this is necessary to civil society. Not only is it necessary that children believe their parents, pupils their teachers, and inferiors those above them, but also that all men have some disposition to adopt the same manners and perform the same actions as those with whom they wish to live. For in order for men to be bound to one another, they must resemble one another in body and spirit. This is the principle of infinitely many things of which we shall speak in what follows. But for what we have to say in this chapter, it is necessary to know that there are natural dispositions in the brain that incline us to compassion as well as to imitation.

Thus, it is necessary to know that not only are the animal spirits borne naturally into the parts of our bodies in order to perform the same actions, and the same movements that we see others perform, but also for the purpose of suffering their injuries in some way and to share in their miseries. For experience teaches us that when we carefully attend to a man someone has rudely struck, or who has a serious wound, the spirits are forcefully borne into the parts of our bodies that correspond to those we see wounded in another provided that the flow of these spirits is not turned elsewhere, by deliberately stimulating with some force, a part of the body other than that seen to be injured. Or that the natural flow of spirits toward the heart and viscera, which ordinarily takes place in sudden disturbances, does not lead away or change that of which we are speaking in any way. Or finally that no extraordinary connection between the traces in the brain and the movements of the spirits produces the same effect.

This transport of spirits in the parts of our bodies that correspond to those parts one sees injured in others causes an acute impression in sensitive people with a vivid imagination and very soft and tender flesh. For they very often feel a kind of shivering in their legs, for example, when they look carefully at someone with a wound there, or actually receive a blow there. Here is what one of my friends writes, which might be taken to confirm my thinking:

> An aged man, who resides with one of my sisters, being ill, a young maid servant of the house held the candle while he was being bled through the foot. When she saw that he was about to be lanced, she was seized with such apprehension that for three or four days afterwards she felt a pain in the same place in her foot so vivid that she was obliged to stay in bed during that time.

The reason for this occurrence is, according to my principle, that the spirits are forcefully spread into the parts of our bodies that correspond to those we see hurt in others and that in order to keep them more taut, they render them more perceptible to our souls so that it can be on its guard to avoid the evils we see happening to others.

This compassion in bodies produces a compassion in the spirits. It excites us to help others because in so doing we help ourselves. Finally, it checks our malice and cruelty. For the horror of blood, the fear of death—in a word, the sensible impression of compassion—often prevents the massacre of animals, even by those most convinced that they are merely machines, because most men are unable to kill them without themselves being wounded by the counterblow of compassion.

What must be especially noted here is that the sensible sight of the wound a person receives produces another wound in those who see it that is greater in proportion as they are weaker and more delicate. This is so because sensible sight, pushing the animal spirits powerfully into the parts of the body corresponding to those they see wounded, makes a greater impression in the fibers of a delicate body than in those of a strong and robust one.

Thus, men who are full of strength and vigor are not wounded by the sight of a massacre, and they are not moved to compassion so much because this sight shocks their bodies as because it shocks their reason. These persons have no compassion at all for criminals; they are inflexible and inexorable. But as to women and children, they suffer much pain from the wounds they see others receive. They instinctively have much more compassion for the miserable, and they cannot even see a beast beaten or hear it cry without some disturbance of mind.

For unborn children, still in the womb, the delicacy of the fibers of their flesh being infinitely greater than that of women and children, the flow of the spirits is bound to produce more considerable changes in them, as we shall see in the sequel.

What I have just said can still be regarded as a simple hypothesis if one wishes, but we should try to understand it well if we wish to conceive distinctly the things I propose to explain in this chapter. For the two suppositions I have just made are the principles of an infinity of things ordinarily thought to be very difficult and very complex, and which seem to me impossible to clarify without accepting these hypotheses. Here are examples that can serve to clarify and even to prove the two suppositions I have just made.

III. Explanation of the generation of monstrous children and of the propagation of the species.

About seven or eight years ago, I saw at the *Incurables* a young man who was born mad, and whose body was broken in the same places in which those of criminals are broken. He had remained nearly twenty years in this state. Many persons saw him, and the late queen mother, upon visiting this hospital, was curious to see and even to touch the arms and legs of this young man where they were broken.

According to the principles just established, the cause of this disastrous accident was that his mother, having known that a criminal was to be broken, went to see the execution. All the blows given to this miserable creature forcefully struck the imagination of this mother and, by a sort of counterblow,[a] the tender and delicate brain of her child. The fibers of this woman's brain were extremely shaken and perhaps broken in some places by the violent flow of the spirits produced at the sight of such a terrible occurrence, but they retained sufficient consistency to prevent their complete destruction. On the other hand, the child's brain fibers, being unable to resist the torrent of these spirits, were entirely dissipated, and the destruction was great enough to make him lose his mind forever. That is the reason why he came into the world deprived of sense. Here is why he was broken at the same parts of his body as the criminal his mother had seen put to death.

At the sight of this execution, so capable of frightening a woman, the violent flow of the mother's animal spirits passed very forcefully from her brain to all the parts of her body corresponding to those of the criminal,[b] and the same thing happened in the child. But, because the mother's bones were capable of resisting the violence of these spirits, they were not wounded by them. They may not even have felt the slightest pain, or the least trembling in her arms and legs, when

[a] According to the first hypothesis.

[b] According to the second hypothesis.

those of the criminal were broken. But this rapid flow of the spirits was capable of sweeping away the soft and tender parts of the child's bones. For the bones are the last parts of the body to be formed, and they have very little consistency in a child still in the mother's womb. And it must be noted that if this mother had determined the motion of these spirits toward some other parts of her body by forcefully stirring them, her child would not have had its bones broken at all, but the part corresponding to that toward which the mother would have determined these spirits would have been badly injured, according to what I have already said.

The explanations of this accident are broad enough to explain how pregnant women who see people marked on certain parts of the face imprint these same marks on their unborn children, and on the same parts of their bodies; and one can judge from this that it is with reason that pregnant women are urged to rub some hidden part of their body when they see something that surprises them, or when they are excited by some violent passion, for that can make the marks appear on these hidden parts rather than on face of their child.

We would have many examples like the one I have just reported if children could live after after having received such great wounds, but ordinarily they are aborted. For it can be said that nearly all infants who die in the womb without being ill have no other cause of their misfortune than the terror, or some ardent desire, or some other violent passion of their mothers. Here is another rather peculiar example.

It has not been more than a year since a woman, having attended too carefully to the portrait of Saint Pius on the feast of his canonization, gave birth to a child who looked exactly like the representation of the saint. He had the face of an old man, as far as is possible for a beardless child; his arms were crossed upon his chest, with his eyes turned toward the heavens; and he had very little forehead, because the image of the saint being raised toward the vault of the church, gazing toward heaven, had almost no forehead. He had a kind of inverted miter on his shoulders, with many round marks in the places where miters are covered with gems. In short, this child strongly resembled the tableau after which its mother had formed it by the power of her imagination. This is something that all Paris has been able to see as well as me, because the body was preserved for a considerable time in alcohol.

The example has this peculiarity: it was not the sight of a living man, agitated by some passion, that moved the spirits and blood of the mother to produce such a strange effect, but only the sight of a tableau, which, however, was very sensible and accompanied by a great movement of the spirits, whether through the ardor and application of the mother or by the agitation that the turmoil of the festival caused in her.

Thus, this mother looking intently and with agitation of the spirits at this tableau, it follows from the first hypothesis that the unborn child also saw it intently and with agitation of the spirits. The mother, being vividly struck by the tableau, imitated it at least in posture, according to the second hypothesis. For her body, being completely formed, and the fibers of her flesh being hard enough to resist the flow of the spirits, she could not imitate it or render herself like it in all respects. But, the fibers of the child's flesh, being extremely soft, and as a result susceptible to all kinds of configurations, the rapid flow of the spirits produced in its flesh all that was necessary to make it exactly like the image it perceived. And the imitation to which children are the most disposed is nearly always as perfect as can be. But this particular imitation, having given to the body of this infant a shape too far removed from its ordinary one, caused its death.

There are many other examples of the power of a mother's imagination in the literature, and there is nothing so bizarre that it has not been aborted at some time. For not only do they give birth to deformed infants but also fruits they have wanted to eat, such as apples, pears, grapes, and other similar things.

If the mother imagines and strongly desires to eat pears, for example, the unborn, if the fetus is alive, imagines them and desires them just as ardently; and, whether the fetus be alive or not, the flow of spirits excited by the image of the desired fruit, expanding rapidly in a tiny body, is capable of changing its shape because of its softness. These unfortunate infants thus become like the things they desire too ardently. But the mother does not suffer from it, because her body is not soft enough to take on the figure of the things she imagines, and so she cannot imitate them or make herself entirely like to them.

Now it need not be imagined that this correspondence I have just explained, which is sometimes the cause of such great disorders, is a useless thing, or an ordained evil in nature. On the contrary, it seems very useful to the propogation of human bodies or to the formation of the fetus, and it is absolutely necessary to the transmission of certain dispositions of the brain, which should be different at different times and in different countries. For it is necessary, for example, that the lambs of certain countries have a brain disposed to flee immediately from wolves, because there are many of them in these places and they have much to fear from them.

It is true that this communication between the brain of the mother and that of her child sometimes has bad results when the mother allows herself to be overwhelmed by some violent passion. Nevertheless, it seems to me that without this communication, women and animals could not easily bring forth young of the same species. For although one can give some explanation of the formation of the fetus in general, as Descartes has tried successfully enough, nevertheless it is very difficult, without this communication of the mothers brain with the child's, to explain why a mare does not give birth to a calf, or a chicken lay an egg containing a partridge or some bird of a new species; and I believe that those who have mediated on the formation of the fetus will be of this opinion.

It is true that the most reasonable thinking, that which conforms most closely to experience in this very difficult question of the formation of the fetus, is that infants are already almost completely formed even before the action by which they are conceived, and during the gestation period their mothers do nothing but provide them their normal growth. However, this communication of the mother's animal spirits and brain with those of the infant seems to serve to regulate this growth, determining the particles used to nourish it to be arranged gradually in the same way as in the mother's body; which is to say, this communication of the spirits renders the child like its mother, or of the same species. This would seem to be proved by the mutations or accidents that occur when the imagination of the mother is deranged and when some violent passion changes the natural disposition of her brain, for then, as has just been explained, this communication changes the conformation of the child's body, so that the mother sometimes aborts a fetus more similar to fruits she has desired, because the spirits find less resistance in the fibers of the child's body.

However, I do not deny that God could have disposed all things necessary for the propagation of the species throughout the infinite ages in a manner so precise and regular that mothers would never abort, but would always give birth to children of the same size and color or, in a word, so similar they would be taken for one another, without this communication of which we have just spoken. For we should not judge God's power by our feeble imagination and we do not know the ends he might have in the construction of his work.

Every day we see that without the aid of this communication plants and trees reproduce their like regularly enough, and that birds and very many other small animals have no need of it in order to make other little ones hatch and grow when they nest on the eggs of a different species, as when a hen sits on partridge eggs. For, however it may be, there is reason to think that seeds and eggs already contain the plants and birds that come from them, and that they can themselves ensure that the tiny bodies of these birds have received their conformation by the communication of which we have spoken, and the plants have received theirs through another equivalent means of communication. However, this may be guessing. But even if one is not guessing, one should not judge what God can do entirely by the things He has done.

Nonetheless, if one considers that plants which receive their growth from the action of their mothers resemble them much more than those from seeds, as tulips, for example, which come from a bulb, are normally of the same colors as their mother, those from a seed being almost always very different, one cannot doubt that if communication of the mother with the offspring is not absolutely necessary to its being the same species, then at least it is always necessary to its being completely like the mother.

So, even if God has foreseen that this communication of the mother's brain with her child's will sometimes make the fetus die and produce monsters because of the derangement of the mother's imagination, still this communication is so admirable, and so necessary for the reasons I have just given as well as for many others I could add, that God's knowledge should not have impeded the execution of His plan. In one sense, it can be said that God never intended to make monsters; for it seems obvious that if God made only one animal, He would never have made it monstrous. But, having had a plan to produce an admirable work by the simplest means, and to link all His creatures with one another, He foresaw certain effects that would necessarily follow from the order and nature of things, and this did not deter Him from his plan. For in the end, although a monster considered by itself would be an imperfect work, nevertheless when it is joined with the rest of the creatures, it does not render the world imperfect or unworthy of the Creator's wisdom when the work is compared with the simplicity of the means by which it is produced.

We have sufficiently explained what a mother's imagination can do to the body of her child. We shall presently examine the power she has over its mind, and try in the same way to discover in its origin the primary derangement of the mind and will of men, for that is our principal intention.

IV. Explanation of some derangements of mind and inclinations of the will.

It is certain that the brain traces are accompanied by sensations, and by ideas of the soul, and that the movements of the animal spirits in the body do not occur without corresponding impulses in the soul. In short, it is clear that all the passions and all the bodily sensations are accompanied by genuine sensations and passions of the soul. Now according to our first hypothesis, mothers communicate their brain traces to their children, and hence the movement of their animal spirits. Thus do they cause in their children's minds the same passions and sensations with which they are affected, thereby corrupting their hearts and their reasoning in many ways.

If it is found that many children carry marks or traces of the idea that struck their mother, even though the skin fibers offer much more resistance to the flow of the spirits than do the soft parts of the brain and the spirits are much more agitated in the brain than nearer the skin, one cannot reasonably doubt that the animal spirits of the mother produce many traces of their irregular motions in the brain of their child. Now, the major brain traces and the corresponding movements of the spirits are preserved for a long time, sometimes throughout one's life. So it is clear that as there are few women without some weakness, or who have not been disturbed by some passion during pregnancy, there must be very few children whose minds are not distorted in some way, and who are not dominated by some passion.

We have only too many experiences of these things, and everyone knows well enough that there are whole families afflicted with great weaknesses of imagination inherited from their parents. But it is not necessary to give particular examples here. On the contrary, it is more appropriate to offer assurances, in order to reassure some people that these parental weaknesses are not natural or proper to man's nature and that the brain traces and vestiges that cause them can be erased with time.

One might nevertheless relate here the example of King James of England, of whom Sir Kenelm Digby speaks in his book on the *Power of Sympathy*. He assures us in this book that when Mary Stuart was pregnant with King James, some Scottish Lords entered her chambers and killed her secretary, who was Italian, in her presence, even though she threw herself in front of him in an effort to obstruct them. This princess received some minor wounds, and her fright so impressed her imagination that they were communicated to the child she carried in her womb. Thus, her son King James remained incapable all his life of looking at a naked sword. Digby says he experienced this himself when he was knighted, for when this prince began to touch his shoulder with the sword, he moved it directly toward his face, and he would even have been wounded had someone not adroitly guided it to where it belonged. There are so many similar examples that seeking them in authors is useless. Undoubtedly, no one disputes these things. For after all one sees very many persons who cannot bear the sight of a rat, a mouse, a cat, or a frog, and especially animals that crawl, such as serpents and lizards, and who know no other cause of these extraordinary aversions than the feat their mothers had of these various animals during pregnancy.

V. Explanation of concupiscence and Original Sin.

But what I want to have especially well noticed is that there is every possible evidence that men retain in their brains even today the traces and impressions of their first parents. For just as animals produce other animals that resemble them, with similar traces in their brains that are the reason why animals of the same species have the same sympathies and antipathies, and perform the same actions in the same circumstances, so our first parents after their sin received such great vestiges and such deep traces in the brain from the impressions of sensible objects that these could well have communicated them to their children. Accordingly, this great attachment we have since birth to all sensible things, and this great gulf between us and God in this state, could somehow be explained by what we have just said.

For as it is necessary according to the established order of nature that the thoughts of the soul conform to the traces in the brain, so one could say that from the time we were formed in the wombs of our mothers we were in sin and infected with the corruption of our parents, for we are very strongly attached to the pleasures of the senses after that time. Having traces in our brains similar to those of the persons who brought us into being, we necessarily also have the same thoughts and inclinations with respect to sensible objects.

And so we are bound to be born with concupiscence and Original Sin,[a] with concupiscence, if it is nothing other than a natural effort by the brain traces to attach the mind to sensible things, and with Original Sin, if Original Sin is nothing but the reign of concupiscence grown victorious, and master of the mind and heart of the child.[b] Now, there is much to suggest that the reign or victory of concupiscence is what we call Original Sin in infants, and actual sin in free men.

If one pays serious attention to these two truths, the first that it is through the body, by generation, that Original Sin is transmitted and that it is not engendered by the soul and the second that the body can only act upon the soul and corrupt it through the traces of the part of the brain upon which its thoughts are naturally dependent, I hope you will be convinced that Original Sin is transmitted in the way just explained.

[a] See further Elucidation 8 on Original Sin.

[b] Rom. 6:12, 14, etc.

VI. Objections and replies.

It seems that one could conclude something contrary to experience from the principles I have just established, namely, that the mother must always communicate to her child habits and inclinations similar to her own, and facility in imagining and learning the things she knows, for all these things as has been said, depend only on the traces and vestiges of the brain. Now, it is certain that the traces and vestiges of the mother's brain are communicated to the child. This has been proved by reported examples about men, and is further confirmed by the example of animals, whose young have brains filled with the same vestiges as those from which they came. This is why all members of the same species have the same voice, the same way of moving their limbs, and finally the same ruses for capturing their prey and defending themselves against their enemies. It must then follow from this that since all the traces of the mothers are engraved and imprinted in the brains of the children, they must be born with the same habits and other qualities as their mothers, and even normally retain them throughout their lives, since the habits one has from earliest youth are the ones preserved the longest, which nevertheless is contrary to experience.

In order to reply to this objection, it must be understood that there are two kinds of traces in the brain. The first are natural, or proper to man's nature, the others are acquired. The natural ones are very deep, and it is impossible to erase them completely. The acquired ones on the contrary can easily be lost, because ordinarily they are not as deep. Now although the natural and the acquired traces differ only in degree, and although the first often have less strength than the second, since we commonly train animals to do things quite contrary to those to which they are inclined by these natural traces (for example, we train a dog not to touch bread and not to run after a partridge he sees and smells) nevertheless there is this difference between these traces: the natural ones have, so to speak, secret alliances with other parts of the body, for all the organs of our machine help maintain themselves in their natural state. All parts of our bodies mutually contribute to all the things necessary for this conservation, or for the restoration of natural traces. And so they cannot be completely erased, and they begin to revive just when one believes they have been destroyed.

On the other hand, the acquired traces, although greater, deeper, and stronger than the natural ones, are gradually lost if one does not take care to preserve them by the continuous application of the causes that produced them, because the other parts of the body do not contribute to their preservation at all but, on the contrary, continually work to lose and efface them. One can compare these traces to ordinary wounds of the body; these are wounds our brain has received, which heal themselves as do other wounds through the admirable construction of the machine. If one made a cut in the cheek even larger than the mouth, this opening will gradually close. But the mouth itself, being a natural opening, can never be rejoined. It is the same thing with the brain traces; the natural ones are never effaced, but the others are healed with time. This truth has infinite consequences for morality.

Thus, there is nothing in the entire body that does not conform to the natural traces; they are transmitted full strength to infants. Hence, parrots make young that have the same cries or the same natural songs as they themselves have. But because the acquired traces are only in the brain and do not radiate to the rest of the body, or at least do so very infrequently, as when they have been imprinted by the motions accompanying violent passions, they should not be transmitted to infants. Thus, a parrot that bids good day and good night to its master will not generate offspring as knowing as itself, and learned, skillful persons will not have children who resemble them in this respect. And so even if it is true that whatever happens in the brain of the mother also happens at the same time in that of her child, that the mother can neither see nor feel anything, nor imagine anything, without the child seeing, feeling, and imagining the same thing, and finally that all the mother's false traces corrupt the child's imagination, nevertheless, if these traces are unnatural in the sense just explained, there is no need to be surprised if they are ordinarily closed as soon as the infant leaves the mother's womb. For at that point, the cause that formed and sustained these traces no longer subsists, the natural constitution of the whole body contributes to their destruction, and sensible objects produce other quite new, very deep, and numerous ones that efface nearly all those the infant had in the womb. For, since a great pain always causes us to forget those that preceded it, it is impossible for such vivid sensations as those of a child receiving the impression of objects on its delicate sense organs for the first time, not to efface most of the traces it received from the same object only through a sort of indirect impression when it was almost shielded from them in its mother's womb.

Nonetheless, when these traces are formed by a strong passion, and accompanied by a very violent agitation of the mother's blood and spirits, they act so forcefully on the child's brain and the rest of its body that they are imprinted there as deeply and durably as natural traces, as in the example from Sir Kenelm Digby, and that of the infant born crippled and an idiot, in whose brain and members the mother's imagination had produced such great ravages, and finally as in the example of the general corruption of man's nature.

And there is no reason to be surprised if the children of the king of England did not have the same weakness as their father. First, because these kinds of traces are never imprinted as deeply in the rest of the body as are the natural ones; and second, because the mother's not having the same weakness as the father, her sound constitution prevented this from happening; and finally, because mothers have infinitely more influence on the brains of children than do fathers, as is evident from the things just said.

But it must be noted that all these reasons which show that the children of King James of England need not share the weakness of their father do not apply against the explanation of original sin, or of this dominant inclination toward sensible things, or this great distance between ourselves and God that we inherited from our parents, because the traces imprinted on the brain of the first men by sensible objects were very deep, they were accompanied and augmented by violent passions. They were also fortified through the continual and necessary use of sensible things for the preservation of life, not only in Adam and Eve but even, as should be well noted, in the greatest saints, in all the men and all the women from whom we are descended; so there is nothing that could have stopped this corruption of our nature. Thus, far from these traces of our first parents having to be gradually effaced, on the contrary, they are bound to be reinforced from day to day; and without the grace of Jesus Christ, which continually opposes this torrent, it would be absolutely true to say with the pagan poet:

Aetas parentum pejor avis tulit
Nos nequiores, mox daturos
Progeniem vitiosiorem.

For we must realize that the vestiges that arouse sentiments of piety in the most saintly mothers do not communicate piety to the infants in their wombs, whereas on the contrary the traces that arouse the ideas of sensible things, and are followed by passions, never fail to communicate the sensation and the love of sensible things to them.

A mother, for example, who is excited to the love of God by the movement of spirits that accompanies the impression of the image of a venerable old man, because this mother has attached the idea of God to this impression of age (for, as we have seen in the chapter on the relation of ideas, this can easily happen, even though there is no relation between God and the image of an old man), this mother, I say, can only produce the trace of an old man in her child's brain, and a favorable attitude toward old men, which is not at all the love of God by which she was touched. For in the end there are no traces in the brain that can, of themselves, arouse any other ideas than those of sensible things, because the body was not made to instruct the mind, and it speaks to the soul only for itself.

Thus, a mother whose brain is full of traces that, by their nature, are related to sensible things and that she cannot erase because concupiscence dwells within her, and whose body is not at all submissive to her, necessarily communicates them to her child, engendering a sinner, even if she be righteous. This mother is righteous, because actually loving or having loved God with a voluntary love, concupiscence does not render her at all criminal, even if she follows its impulse in her sleep. But the child she engenders, never having loved God with a voluntary love and its heart not having been turned toward God, it is clear that it is disordered and deranged, and that there is nothing in it not deserving the anger of God.

But when children have been regenerated through baptism, and have been justified either by a disposition of the heart similar to that which dwells in the just during the dreams of night, or perhaps by a free act of love of God they have made, being anticipated by an actual and infallible help, and delivered for some moments from domination by the body through the power of the Sacrament (for as God has made them to love Him, it is inconceivable that they could actually be justified and in the order of God if they do not love Him, or have not loved Him, or if their hearts are not disposed as they would be if they had actually loved Him) thus, even though they submitted to concupiscence during their childhood, their concupiscence is no longer sinful. It renders them no more guilty or deserving of wrath; they do not cease being just and pleasing to God, for the same reason that we do not lose grace even though we follow the impulse of concupiscence in sleep. For infants, having such a soft brain and receiving such strong and vivid impressions from the weakest objects, do not have sufficient freedom of mind to resist them. But I have lingered too long on subjects that are not quite the concern of this treatise. It is enough that I can conclude here, from what I have just explained in this chapter, that all these false impressions that mothers imprint in the brain of their children falsify their minds and corrupt their imagination, and thus most men are subject to imagining things other than as they are, attributing some wrong color to them, or bestowing some irregular trait on the ideas of the things they perceive. But if anyone wishes further clarification of a more profound nature concerning what I think about original sin and the way I think it is transmitted to infants, they can read the Elucidation [8] corresponding to this chapter at a sitting.

BOOK TWO: PART ONE

Chapter Eight

I. Changes occurring in the imagination of a child emerging from the womb through conversation with its nurse, its mother, and other persons. II. Advice for their upbringing.

<*I. Changes occurring in the imagination of a child emerging from the womb through conversation with its nurse, its mother, and other persons.*>

In the preceding chapter we considered the brain of an infant in its mother's womb; let us now examine what happens to it after emerging from it. At the same time it leaves the darkness and sees light for the first time, the cold of the outside air seizes it, the most caressing embraces of the woman who receives it offend its delicate members, all external objects surprise it; they are all objects of fear to it because it does not yet know them and has no strength to defend itself or flee. The tears and cries with which it consoles itself are infallible signs of its pain and fear, for they are in effect the appeals that nature provides attendants, so that they may relieve it from the pain it suffers and fears.

To fully understand the inadequacies of its mind in this state, it must be remembered that its brain fibers are very soft and very delicate, and, consequently, all external objects make very deep imprints in it. For since the smallest objects are occasionally found capable of wounding a feeble imagination, such a great number of wondrous objects cannot but injure and confuse that of a child.

But in order to conceive still more vividly the confusions and pains of children at birth, and the injury their imaginations must suffer, let us represent to ourselves the surprise of a man who saw that he was being approached by giants five or six times taller than himself who gave no indication of their intentions; or at seeing some new species of animal, which had no relation to those he had previously seen; or how he would react if a flying horse or some other chimera suddenly came down from the clouds to earth. What a profound impression these marvels would make upon the mind, and how addled the brain would be, at having seen them but once!

Quite commonly, unexpected events with terrible consequences cause grown men whose brains are not very susceptible to new impressions, who have experience, and can defend themselves, or at least who can make some decisions, to lose their minds. In coming into the world, infants suffer something from all the unfamiliar objects which strike their senses. All the animals they see are new kinds of animals for them, since they have seen nothing outside the womb before; they have neither strength nor experience; their brain fibers are very delicate and malleable. How then could their imaginations remain uninjured by so many different objects?

It is true that the mothers have already accustomed their children somewhat to the impressions of objects, since they have already traced profound impressions on them while they were still in the womb, and it is for this reason that they are not more badly injured when they first see with their own eyes what they have already perceived in some way through their mothers'. And it is true that the false traces and wounds their imaginations suffer from so many objects terrible to them are closed and healed with time, because they are unnatural, and hence the entire body opposes and erases them, as we have seen in the preceding chapter. And this is what generally keeps all men from being mad from birth. But that does not keep some impressions from being so strong and deep they can never be erased, and so they remain with us throughout our lives.

If men would seriously reflect upon what occurs within themselves, and in their own thoughts, they would not lack evidence for proving what has just been said. They would ordinarily recognize secret inclinations and aversions in themselves, which others do not have, for which it seems that we can give no other explanation than these traces from our earliest days. For since the causes of these inclinations and aversions are particular to us <as individuals>, they are not founded in the nature of man; and since they are unknown to us, they must have acted upon us at a time when our memories were not yet capable of retaining the settings of things, which would have enabled us to remember them. This time could be no other than our most tender infancy.

Descartes wrote in one of his letters that he had a special affection for all who are crosseyed, and that after carefully searching for the cause, he finally recognized that this defect was seen in a young girl he liked when he was a child, the affection he had felt for her having spread to all persons resembling her in some way.

But these little disorders of the inclinations are not what lead us into most of our errors; rather, all or most of our minds are mistaken about something, and we are almost all subject to some kind of folly, although we think we are not. When one carefully examines the nature of those with whom one converses, one is easily convinced of this; even if one should perhaps be unique and others should consider him so, one finds that others are also unique, differing only in degree. There is, then, a fairly ordinary source of men's errors: this disruption of their brain caused by the impression of external objects when they are coming into the world; but this cause does not cease operating as quickly as one might imagine.

The ordinary conversation children are obliged to have with their nurses, or even their mothers, who often have no education, completes the process of corrupting and destroying their minds. These women talk nothing but nonsense, or ridiculous and frightening tales. They speak to them only of sense-perceptible things, and in such a way as to confirm them in the false judgments of sense. In a word, they cast into their minds the seeds of all their own weaknesses, such as their extravagant fears. their ridiculous superstitions, and similar defects. Accordingly, the child, neither accustomed to nor desirous of seeking the truth, finally becomes incapable of discerning it, of making any use of his reason. Whence he derives a certain timidity and meanness of spirit that remains with him for a long time, for there are many children fifteen or twenty years of age who still have the demeanor of their nurses.

It is true that infants do not appear very well suited to meditating on truth, or to the abstract and revealed sciences, because, their brain fibers being very delicate and very easily agitated even by the weakest and least perceptible objects, and their souls necessarily having sensations proportioned to the agitation of these fibers, they avoid metaphysical thoughts and pure intellection, applying themselves exclusively to their sensations. Thus, it seems that infants cannot consider the pure ideas of truth with sufficient attention, being so often and so easily distracted by the confused ideas of the senses.

However, one can reply, first, that it is easier for a child of seven years to be delivered from the errors to which his senses have brought him than for a person of sixty who has followed the prejudices of his childhood throughout his life. Second, that if a child is not capable of clear and distinct ideas of truth, he can at least be warned that his senses deceive him on all kinds of occasions; and if we cannot teach him the truth, at least we should not maintain or fortify him in his errors. Finally, the youngest child, completely occupied as he is with feelings of pleasure and pain, still learns in a short time what older persons cannot learn any faster, such as the order and relations among all the words and all the things they see and hear. For although these things hardly depend on more than memory, still it seems they make considerable use of their reason in the way in which they learn their language.

II. Advice for bringing up children.

But since the ease with which the child's brain fibers receive impressions of sensible objects is why we judge them incapable of the abstract sciences, this is difficult to remedy. For we must admit that if we protect children from fear, desires, and hopes, if we make them suffer no pain and keep them as far removed as possible from their little pleasures, they could be taught the most difficult and abstract things, or the least intuitive mathematics, mechanics, and other such things necessary in the pursuit of life, as soon as they could speak. But they do not care to apply their minds to abstract sciences when they are agitated by desires and we trouble them with fears, which is quite necessary to consider carefully.

For as an ambitious man who had just lost his wealth and his honor, or who had suddenly been raised to a position of great dignity that he had not anticipated, would be in no state to resolve metaphysical questions or algebraic *equations* but only to do the things present passion inspired him to do, so children, in whose brains an apple or a sugarplum makes as deep an impression as do responsibilities and honors in a man of forty, are in no state to hear the abstract truths we teach them. So it can be said that there is nothing so opposed to the advancement of children in the sciences as the continual diversions with which we reward them, and the pains with which we ceaselessly punish and threaten them.

But what is infinitely more important is that these fears of chastisement and these desires for sensible rewards with which the mind of a child is filled completely alienate them from piety. Devotion is still more abstract than science; corrupt natures have still less taste for it. The mind of man is sufficiently inclined to study, but it is not inclined toward piety. If, then, great agitations prevent us from studying, even though it is naturally pleasant, how could children, completely occupied with sensible pleasure with which we reward them and pain with which we frighten them, preserve sufficient freedom of mind to appreciate piety?

The capacity of the mind is very limited; it does not require many things to occupy it, and when it is occupied it is incapable of new thoughts unless first emptied. But when the mind is full of sensible ideas, it does not get rid of them at its pleasure. In order to understand this, it must be considered that we are incessantly carried toward the good by natural inclinations, and that, pleasure being the property by which we distinguish good from evil, it is necessary that pleasure concern us and occupy our attention more than all the rest. Pleasure thus being attached to the use of sensible things, because they are the good of man's body, there is a kind of necessity that these goods fill our minds to capacity, until God spreads a certain bitterness over them, which disgusts and horrifies us, or which enables us to sense, through His grace, that heavenly sweetness which effaces all the pleasures of earth: ''Dando menti coelestem delectationem qua omnis terrena delectatio superetur.''[a]

But because we are as inclined to flee evil as to love good, and because pain is the characteristic that nature has attached to evil, everything just said of pleasure should be understood to apply to pain in the opposite sense.

Since therefore the things that make us feel pleasure and pain fill our minds to capacity, and because we do not have the power to rid ourselves of them or to avoid being affected by them at will, it is obvious that children cannot be made to enjoy piety any more than the rest of mankind, unless one begins according to the precepts of the Gospel, by privation of all things affecting the senses and exciting great desires and fears in us; for all the passions impede and extinguish grace, or that interior delectation God causes us to feel in our duty.

The smallest infants have reason just as well as full grown men, though they do not have experience; they also have the same natural inclinations, though they are inclined to very different objects. It is therefore necessary to train them to be led by reason, since they have it, and they must be stimulated to their duty by adroitly managing their good inclinations. To hold them to their duty by sensible

[a] St. Augustine.

impressions is to stifle their reason and corrupt their better inclinations. They then seem to be interested in their duty, but it is only an appearance on their part. Virtue is firmly embedded neither in their minds nor their hearts; they hardly know it, and love it much less. Their minds are only full of fears and desires, sense aversions and attractions, from which they cannot be disengaged and set free to use their reason. And so children raised in this base and servile manner gradually become accustomed to a certain insensibility to all the sentiments of an upright man and a Christian, and remain so all their lives; and when they try to escape punishment by their authority or by their skill, they are abandoned to everything that flatters concupiscence and the senses, for indeed they know no other goods than sensible ones.

It is true that there are occasions when it is necessary to instruct children through their senses. But this is needed only when reason will not suffice to do so. They must first be persuaded through reason of what they should do, and if they do not have sufficient light to recognize their obligations, it seems best to leave them alone awhile. For to make them exhibit externally what they do not believe to be their duty would not be to teach them, since it is the mind that must be taught and not the body. But if they refuse to do what reason shows them they ought to do, they need never be endured but instead one must go so far as some kind of violence; for in such situations, he who spares his son shows him more hatred than love, according to the wise man.[a]

If punishment neither instructs the mind nor makes one love virtue, at least it teaches the body to some extent and impedes one's enjoyment of vice, thereby preventing one from becoming a slave. But it is especially important to note that pains do not fill the mind's capacity as do pleasures. We easily stop thinking of them when we cease to suffer from them and when there is no more reason to fear them. For then they do not provoke attention of the imagination, nor excite the passions; they do not inflame concupiscence; finally, they leave the mind free to think of whatever it pleases. Thus, one can use the worse side of children to keep them dutiful, or apparently dutiful.

But, even if it is sometimes useful to frighten and punish children with sensible chastisement, it must not be concluded that one should entice them with sensible rewards; what strongly affects the senses should not be used except in dire necessity. We must not give them sensible rewards, representing these to them as the purpose or end of the occupation. On the contrary, this would corrupt all their actions and lead them toward sensuality rather than virtue. The traces of pleasure one has enjoyed remain strongly imprinted in the imagination; they continually revive the ideas of sensible goods; they always excite importunate desires that disturb the peace of the mind; finally, they inflame concupiscence in every situation, which is a leaven that corrupts everything. But this is not the place to explain these things as they deserve.

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[a] "Qui parcit virgae odit filium suum." Prov. 13:24.

BOOK TWO

PART TWO: THE IMAGINATION

Chapter One

I. The imagination of women. II. Of men. III. Of the aged.

We have given some idea of the physical causes of disorder of men's imagination in the other part. In this part we shall try to apply these causes to the most general errors, and we shall speak again of those causes of our errors called moral causes.

One could see from the things said in the preceding chapter that the delicacy of the brain fibers is one of the principal causes impeding our efforts to apply ourselves to discovering truths that are slightly hidden.

I. The imagination of women.

This delicacy of the brain fibers is usually found in women, and this is what gives them great understanding of everything that strikes the senses. It is for women to set fashions, judge language, discern elegance and good manners. They have more knowledge, skill, and finesse than men in these matters. Everything that depends upon taste is within their area of competence, but normally they are incapable of penetrating to truths that are slightly difficult to discover. Everything abstract is incomprehensible to them. They cannot use their imagination for working out complex and tangled questions. They consider only the surface of things, and their imagination has insufficient strength and insight to pierce it to the heart, comparing all the parts, without being distracted. A trifle is enough to distract them, the slightest cry frightens them, the least motion fascinates them. Finally, the style and not the reality of things suffices to occupy their minds to capacity; because insignificant things produce great motions in the delicate fibers of their brains, these things necessarily excite great and vivid feelings in their souls, completely occupying it.

If it is certain that this delicacy of the brain fibers is the principal cause of all these effects, it is not at all certain that it is to be found in all women. Or, if it be found in them, their animal spirits are sometimes so proportioned to the brain fibers that some women are found to have stronger minds than some men. Strength of mind consists in a certain constitution of the volume and agitation of the animal spirits with the brain fibers; and sometimes women have the right constitution. There are strong, constant women, and there are feeble, inconstant men. There are learned women, courageous women, women capable of anything; and on the other hand, one finds men who are soft and effeminate, incapable of penetrating or accomplishing anything. In short, when we attribute certain defects to a sex, to certain ages, to certain stations, we mean only that it is ordinarily true, always assuming there is no general rule without exceptions.

For it need not be thought that all men or all women of the same age, nationality, or family have the same brain constitution. It is more appropriate to believe that just as no two faces are exactly alike, no two imaginations are entirely alike, and that all men, women, and children differ from each other only in degree with regard to the delicacy of their brain fibers. For just as we need not hastily suppose an essential *identity* between things between which we see no differences, so we need not posit essential differences where we do not find perfect *identity*. For these are mistakes we usually make.

What can be said of the brain fibers is that normally they are very soft and very delicate in children, that with age they become hardened and strengthened; however, most women's and some men's remain extremely delicate throughout their lives. Nothing is known of further determinations. Suffice it to say of women and children that since they are not involved in seeking truth and teaching others, their errors do not sustain much prejudice, for one hardly takes their proposals seriously. Let us speak of grown men, whose minds are strong and vigorous, those one could believe capable of finding the truth and teaching it to others.

II. The imagination of men at the prime of life.

Ordinarily, the greatest perfection of mind is from thirty to fifty years. At this age the brain fibers have acquired a moderate consistency. The pleasures and pains of the senses do not make much impression on us. So that one now needs to be defended only against violent passions, which occur rarely and which one can protect oneself against if one is careful to avoid all its occasions. Thus, the soul, being no longer diverted by sensible things, can easily contemplate the truth.

A man in this state, who was not filled with childhood prejudices, who would have acquired the facility for meditation in his youth, who would be unsatisfied except by clear and distinct notions of the mind, who carefully rejected all the confused ideas of the senses, and who had the time and will to meditate, would doubtless fall into error only with difficulty. But this is not the man of whom we must speak; we must talk about ordinary men, who usually have none of this.

I say then that the solidity and consistency found with maturity in the fibers of the brains of men, makes their errors solid and consistent, if one may so speak. It is the seal that confirms their prejudices and all their false opinions, and that hides them from the force of their reason. In brief, however advantageous this constitution of the brain fibers may be to well-bred persons, it is just as harmful to most men, since it confirms them in the thoughts they already have.

But men are not merely confirmed in their errors by the time they reach the age of forty or fifty, they are still more liable to fall into new ones, because believing themselves capable of judging everything, as indeed they ought to be, they make decisions with presumption and consult only their prejudices. For men reason about things only in relation to their most familiar ideas. When a chemist wants to reason about some natural body, his three principles immediately come to mind; a Peripatetic thinks first of the four elements and the four primary qualities; and another philosopher relates everything to other principles. Thus, nothing can enter a man's mind without being immediately infected with the errors to which he is subject, thereby increasing their number.

This consistency of the brain fibers has another very bad effect, principally in older persons, which is to render them incapable of meditation. They cannot bring their attention to bear on most of the things they want to know, and thus they cannot penetrate slightly hidden truths. They cannot consider the most reasonable opinions when they are founded upon principles that seem novel to them, though they are otherwise very intelligent concerning things of which age has given them much experience. But everything I say here is intended to be true only of those who have spent their youth without using their mind, without applying it.

To clarify these things, it must be realized that we cannot learn anything if we do not give it our attention, and that we can hardly be attentive to something if we do not imagine it and do not represent it vividly in our brain. Now, in order to be able to imagine certain objects, we must make some part of our brain submit, or imprint some other motion upon it, to be able to form the traces to which ideas are attached, which represent these objects to us. So that if the brain fibers are slightly hardened, they will only be capable of the dispositions and motions they formerly had. Thus, the soul would be unable to imagine, and consequently unable to attend to, whatever it wishes, but only to the things familiar to it.

From this it must be concluded that it is very advantageous to be practiced in meditating on all kinds of subjects to acquire a certain facility in thinking about whatever one wishes. For just as we acquire a facility for moving the fingers of our hands in all kinds of ways and with great speed by the frequent use we make of them in playing instruments, so too the parts of our brain whose movement is necessary for imagining whatever we wish acquire through use a certain facility for being bent that enables one to imagine what one wishes with great ease, promptness, and even clarity.

Now, the best means for acquiring this facility that makes the principal difference between a man of intelligence and any other is to be trained from youth to seek the truth of even the most difficult things, because at that age the brain fibers are capable of all kinds of inflections.

Nevertheless, I do not pretend that this facility can be acquired by those called studious persons who apply themselves only to reading without meditating, and without seeking the resolutions to problems on their own before reading about them in the Authors. It is very obvious that by this route one acquires only the facility of remembering what has been read. We see every day that those who have read much cannot focus their attention on new things one discusses with them, and that the vanity of their erudition makes them want to judge these new things before conceiving them, and makes them fall into gross errors of which other men are incapable.

But although lack of attention is the main cause of their errors, there is still another one peculiar to them. It is that, finding constantly in their memories an infinity of confused species, they immediately settle upon one they consider to be in question; and because the things one says do not conform to it, they ridiculously judge that one is misled. When we wish to show that they themselves are mistaken, and that they do not even understand the state of the question, they become irritated, and being unable to understand what is being said to them, continue to be attached to this false species their memory has presented to them. If one shows them too clearly the falsity of this species, they substitute a second and a third for it, which they sometimes defend against all appearance of truth and even against their own conscience, because they have scarcely any respect or love for truth, while being very confused and ashamed to admit there are things another knows better than they.

III. The imagination of the aged.

Everything that has been said about persons forty and fifty years old should again be understood to be true, with more reason, of aged people, because their brain fibers are even more inflexible, and because, lacking the animal spirits to trace new vestiges in their brains, their imagination is quite languid. And as their brain fibers are normally mixed with an abundance of superfluous humors, they gradually lose the memory of things past and fall into the ordinary weaknesses of children. And so in this decrepit age they have defects that depend upon the constitution of the brain fibers found in children and mature men; but it can be said that they are wiser than either, because they are no longer so subject to their passions, which derive from the movement of the animal spirits.

I shall not explain these things further because it is easy to judge this age by comparison with those of which I have spoken, and to conclude that the aged have still more difficulty than all the others in conceiving what is said to them, that they are more attached to their prejudices and their entrenched opinions, and, as a result, that they are still more attached to their errors, their bad habits, and other such things. I only aver that the state of being aged does not occur precisely at sixty or seventy years, that not all old people are senile, that those beyond sixty are not always free from the passions of young people, and that we must not draw too general consequences from the principles that have been established.

BOOK TWO: PART TWO

Chapter Two

That the animal spirits ordinarily flow in the traces of the ideas most familiar to us, which is why we do not judge things soundly.

I think I have sufficiently explained in the preceding chapters the various changes encountered in the animal spirits, and in the constitution of the brain fibers, according to the different ages. Thus, provided one meditates a little on what I have said of them, one will soon have a rather distinct knowledge of the imagination and of the most ordinary physical causes of the differences among minds, since all the changes occurring in the imagination and the mind are only the consequences of those encountered in the animal spirits and the fibers of which the brain is composed.

But there are many particular causes, which could be called moral, of the changes that happen to the imagination of man, namely, their different conditions, their different work—in a word, their different ways of living—that must be considered because these kinds of changes are the cause of almost infinitely many errors, each person judging things by reference to his condition. I do not believe I should stop to explain the effects of some less ordinary causes, such as major illnesses, surprising misfortunes, and other unforeseen accidents, that make very violent impressions in the brain, and even completely disrupt it, because these things rarely happen; besides, the errors into which these persons fall are so gross they are not contagious, since everyone easily recognizes them.

In order to understand completely all the changes the different conditions produce in the imagination, it is absolutely necessary to be reminded that we imagine objects only by forming images of them, and that these images are nothing other than the traces the animal spirits make in the brain; that we imagine things more strongly in proportion as these traces are deeper and better engraved, and as the animal spirits have passed through them more often and more violently; and that when the spirits have passed through these traces many times, they enter there more easily than other places nearby, through which they have never passed, or have not passed as often. This is the most ordinary cause of the confusion and falsity of our ideas. For the animal spirits that were directed by the action of external objects, or even by orders of the soul, to produce certain traces in the brain often produce others that truly resemble them in some things, but that are not quite the traces of these same objects, nor those the soul desired to be represented, because the animal spirits, finding some resistance in the parts of the brain whence they should pass, and being easily detoured crowd into the deep traces of the ideas that are more familiar to us. Here are some very obvious and intuitive examples of all this:

When those who are slightly nearsighted look at the moon, they ordinarily see two eyes, a nose, a mouth, in a word, they seem to see a face. However, there is nothing on the moon corresponding to what they think they see there. Many persons see something else there. And those who believe the moon really is as it seems to them will be easily corrected if they look at it through a telescope, no matter how small, or if they consult the descriptions that Hevelius, Riccioli, and others have given to the public. Now, the reason we normally see a face in the moon, and not the irregular blotches that are there, is that our brain traces of a face are very deep, because we often look at faces, and with much attention. So that the animal spirits, meeting resistance in the other places of the brain, are easily detoured from the direction that the light of the moon impresses on them when we look at it, in order to enter into those traces to which the ideas of a face are attached by nature. Besides, the apparent size of the moon is not very different from that of an ordinary head at a certain distance. Hence the moon forms traces through her impressions that are very much linked to those representing a nose, a mouth, and eyes, thereby determining the spirits to follow the traces of a face. There are those who see a man on horseback in the moon or something other than a face, because, their imaginations having been vividly struck by certain objects, the traces of these objects are reopened by the least thing relating to them.

It is also for this same reason that we imagine ourselves to see chariots, men, lions, or other animals in the clouds, when there is any slight relationship between their shapes and these animals; and this is why everyone, especially those accustomed to drawing, sometimes see men's heads on walls with many irregular colored patches.

It is again for this reason that spirits of wine, entering into the most familiar traces without direction from the will, cause the most important secrets to be revealed, and why in sleep we usually dream of objects we have seen during the day, which have formed the deepest traces in the brain, because the soul always represents the things of which it has the greatest and most profound traces. Here are other more complex examples.

A disease is new: it causes ravages that astonish the world. This imprints such profound traces in the brain that this disease is always before the mind. If this disease is called scurvy, for example, then all diseases will be scurvy. Scurvy has a dozen symptoms, of which many are common to other maladies; this means nothing. If it happens that a sick man has some one of these symptoms, it will be scurvy, and no one will even think of the other diseases having the same symptoms. One will expect that all the accidents that have happened to those observed ill with scurvy will also happen to him. The same medicines will be given, and everyone will be surprised when they do not have the same effect observed in the others.

An author is so involved in a species of study, that the traces of the subject of his occupation are so profoundly imprinted, and spread so vividly throughout his brain, that they sometimes efface the traces of even quite different things. There was one of them, for example, who had written many volumes on the Cross; that made him see crosses in everything, and it is with reason that Father Morin takes him to task for believing that a medal represented a cross, when it represented something quite different. It is by a similar turn of the imagination that Gilbert and many others, after having studied the magnet and admired its properties, wanted to relate a large number of natural effects to these *magnetic* qualities, which had not the least relation to them.

The examples just presented suffice to prove that the imagination's great facility for representing familiar objects, and the difficulty it encounters in imagining those new to it, nearly always makes men form ideas that can be called mixed and impure, and that the mind judges things in relation to itself and to its first thoughts. Thus, men's different passions, their inclinations, conditions, employments, qualities, studies, in short, all the different ways of living, causing very great differences in their ideas, make them fall into an infinite number of errors we shall explain in the sequel. And it is this which made Chancellor Bacon utter these very judicious words:

> Omnes perceptiones tam sensus quam mentis sunt ex analogia hominis, non ex analogia universe: estque intellectus humanus instar speculi inaequalis ad radios rerum qui suam naturam naturae rerum immiscet, eamque distorquet, et inficit.

BOOK TWO: PART TWO

Chapter Three

I. That studious persons are most subject to error. II. Reasons why we prefer to be guided by authority than to make use of our minds.

The differences in men's ways of life are almost infinite. There are a very great number of different conditions, employments, responsibilities, and communities. These differences make nearly all men act for quite different ends, and reason according to different principles. It would even be rather difficult to find several residents with identical views in the same community, where they should have a united mind, and the same pattern. Their different jobs and relationships necessarily posit some difference in the course and manner they wish to take in accomplishing things, even those things on which they agree. This shows it would be an impossible undertaking to explain in detail the moral causes of error, and it would be useless to do so here. I wish only to speak of ways of living that sustain more errors, and more important errors. When these have been explained, we shall have given sufficient opening for the mind to proceed further, and each will be able to see at a glance, and with great ease, the very hidden causes of many particular errors, that one could not otherwise explain without much time and trouble. When the mind sees clearly, it is pleased to race to the truth; and it races there with inexpressible speed.

I. That studious men are the most subject to error.

The occupation of which it seems most necessary to speak here, because it produces more considerable changes in the imagination of men that are more conducive to error, is the occupation of scholars, who use their memories more than their minds. For experience has always shown that those who applied themselves with more ardor to reading books and the search for truth are the ones who have thrown us into more errors.

The same is true of students as of travelers. When a traveler has the misfortune to mistake one route for another, the farther he goes, the farther he is from where he wanted to go. He goes farther astray as he is more diligent and hastens to arrive where he wants to be. Thus, these ardent desires men have for the truth throw them into reading books where they think they will find it, or else they form for themselves a chimerical system of things they want to know, to which they stubbornly cling. And they even try through vain efforts of mind to interest others in it, in order to receive the honor usually given to inventors of systems. Let us explain these two defects.

It is rather difficult to understand how it can be that men who have a mind prefer to use the minds of others in the search for truth, rather than that which God has given them. There is no doubt infinitely more pleasure and honor in being guided by one's own eyes than by those of others, and a man who has good eyes will never think of closing them, or removing them, in the hope of finding a guide. ''Sapientis oculi in capite ejus, stultus in tenebris ambulat.''[a] Why does the fool walk in the dark? Because he sees only through the eyes of another, and to see in this way is, strictly speaking, to see nothing. The use of the mind is to the use of the eyes as the mind is to the eyes. And just as the mind is infinitely above the eyes, so the use of the mind is accompanied by much more solid satisfactions that gratify it in a quite different way than light and colors gratify sight. Nevertheless, men are always guided by their eyes, and almost never use their minds to discover truth.

II. Reasons why we prefer to follow authority rather than to use our minds.

But there are many causes that contribute to this overthrow of the mind. First, the natural laziness of men, who do not want to take the trouble to meditate.

Second, the lack of a capacity for meditating, into which we have fallen for lack of application to it during youth, when the fibers of the brain were capable of all kinds of inflections.

In the third place, our lack of love for abstract truths, which are the foundation of everything we can know in this lower world.

In the fourth place, the satisfaction one receives from the knowledge of probabilities, which are very agreeable and very moving, because they are founded upon sensible notions.

In the fifth place, the stupid vanity that makes us hope to be esteemed as scholars, for we call scholars those who have read the most. The knowledge of opinions is much more useful for conversation, and for causing admiration in the minds of ordinary people, than the knowledge of the true philosophy one learns in meditating.

In the sixth place, because we imagine without reason that the ancients were more enlightened than we can be, and that there is nothing to do at which they have not already succeeded.

In the seventh place, because a false respect mixed with a stupid curiosity makes us admire those things farthest removed from us, the oldest things, those from the farthest or most unknown countries, and even the most obscure books. Thus, in the past Heraclitus[b] was esteemed for his obscurity. We search for ancient medals although they are encrusted with rust, and we carefully guard the lantern and worm-eaten slipper of some ancient: their antiquity constitutes their price. People apply themselves to reading the Rabbis, because they wrote in a very corrupt and obscure foreign tongue. We greatly esteem the opinions of the oldest, because they are the farthest from us. And without doubt, if Nimrod had written the history of his reign, all the finest policy and even all the other sciences would be included, just as some people find that Homer and Virgil had a perfect knowledge of nature. It is said that we must respect antiquity: could Aristotle, Plato, Epicurus, these great men, be mistaken? We do not consider that Aristotle, Plato, and Epicurus were men like us, of the same species as we; that, moreover, in our time the world is older by two thousand years, it has gained more experience, and should be more enlightened; that it is the age of the world and its experience that make for the discovery of truth.[a]

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[a] Eccles. 2:14.

[b] ''Clarus ob obscuram linguam.'' Lucretius [*De rer. nat.* 1. 639].

In the eighth place, when we esteem a new opinion, or a contemporary author, it seems their glory effaces our own because we are too near to it; but we have no comparable fear of the honor rendered to the ancients.

In the ninth place, truth and novelty cannot be found together in things of the faith. Because men do not wish to make the distinction between truths that depend upon reason and those that depend upon tradition, they do not consider that one should learn them in completely different ways. They confuse novelty with error, and antiquity with truth. Luther, Calvin, and others innovated, and erred; therefore, Galileo, Harvey, Descartes are mistaken in anything novel they say. Luther's impanation is novel, and it is false; therefore Harvey's theory of the circulation of the blood is false, since it is new. It is also for this reason that they call both heretics and the new philosophers indifferently by the odious name of innovator. The ideas and the words *truth* and *antiquity*, *falsity* and *novelty* have been linked to one another, which has resulted in the fact that common men no longer separate them, and even thinking people have some difficulty keeping them distinct.

In the tenth place, we are in an age when the knowledge of ancient opinions is still in vogue, and hardly anyone who uses his mind can be placed above evil customs by the strength of his reason. When one is in the press and the mob, it is difficult not to give in to the torrent carrying one along.

Finally, because men act only for interest, and this is what causes even those who have disabused themselves and recognize the vanity of such studies, nevertheless to continue applying themselves to them; because honors, dignities, and even benefices are attached to them, and those who excel in such studies always have more of these than those who are unaware of them.

All these reasons make it sufficiently comprehensible, it seems to me, why men proudly follow the ancient opinions as true and why they indiscriminately reject all new ones as false, in short, why they never or hardly ever use their own minds. There are doubtless many more particular reasons that contribute to this. But if one carefully considers those I have reported, one will have no cause to be surprised at certain people stubbornly clinging to the authority of the ancients.

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[a] Veritas filia temporis, non auctoritatis.

BOOK TWO: PART TWO

Chapter Four

Two bad effects of reading upon the imagination.

This false and blind respect men have for the ancients[a] produces a great many very pernicious effects deserving of note.

The first is that they become accustomed to not using their minds, which gradually makes them really incapable of using them. For it need not be imagined that those who grow old on the books of Aristotle and Plato make much use of their minds. They usually spend much more time reading these books than trying to enter into the opinions of their authors, and their principal end is truly to know the opinions they held, without giving much trouble to what must be held about them, as will be proven in the following chapter. Thus, the science and the philosophy they learn is properly a science of memory and not a science of understanding. They understand only histories and facts and not evident truths, and they are historians rather than true philosophers, men who do not think but who can recount the thoughts of others.

The second effect produced in the imagination by the reading of the ancients is that it causes a strange confusion in all the ideas of most of those who apply themselves to it. There are two different ways of reading the authors; one is very good and useful, the other useless and even dangerous. It is very useful to read when one meditates on what one reads; when one tries, through an effort of the mind, to resolve the questions one sees in the chapter titles, even before beginning to read them; when one arranges and compares the ideas of things with each other; in a word, when one uses his reason. On the contrary, it is useless to read when we do not understand what we read; but it is dangerous to read, and to conceive what we read, when we do not examine it sufficiently to judge it carefully, especially if we have sufficient memory to retain what we conceive, and sufficient imprudence to agree to it. The first way enlightens the mind, it fortifies it, and augments its understanding. The second diminishes its understanding, and gradually renders it weak, obscure, and confused.

Now most of those who glory in knowing the opinions of others study only in the second way. Hence, the more they read, the weaker and more confused their minds become. The reason is that their brain traces are confused with each other, because there are so many of them, and reason has not arranged them in order. This prevents the mind from imagining and from representing clearly to itself the things it needs. When the mind wants to open certain traces but encounters other more familiar ones crossing them, it is misled. The brain's capacity not being infinite, it is nearly impossible for so many traces, formed without order, to avoid becoming mixed up and bringing confusion into the ideas. It is for this same reason that persons of great memory are not normally capable of judging things well where it is necessary to bring much attention to bear.

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[a] See the first article of the preceding chapter.

But what must be especially noted is that the knowledge acquired by those who read without meditating, who read only to retain the opinions of others (in a word, all the knowledge that depends upon memory) is properly knowledge that "puffs up"[a] because it glitters and gives much vanity to those who possess it. Hence, those learned in this way, usually being filled with pride and presumption, pretend to have the right to judge everything, although their ability is very meager. And this leads them into a great many errors.

But this false knowledge produces a still greater evil. For these persons do not fall into error all by themselves; they take along the minds of nearly all the common people, and very many young people who believe all their decisions as articles of faith. These false scholars, having often overwhelmed them with the weight of their profound erudition, and stunned them as much by their extraordinary opinions as by the names of the ancient and unknown authors they quote, have acquired such a powerful authority over their minds that they respect and admire as oracles everything that comes out of their mouths, and blindly join in all their opinions. Even much more spiritual and judicious persons, who had never known them and knew nothing else about what they are, seeing them speak in such a decisive manner, with such a haughty air, so imperious and so grave, would have some difficulty witholding respect and esteem for what they say, because it is very difficult not to give any to their air and manners. For just as it often happens that a proud and bold man mistreats others who are stronger but more judicious and restrained than he, so also those who uphold opinions that are neither true nor even probable, often overcome the words of their adversaries by speaking to them in an imperious, haughty, or grave manner that deceives them.

Now, those of whom we speak have so much self-esteem and so much contempt for others as to be fortified in a certain air of pride, mixed with gravity and a false modesty, that preoccupies and wins those who listen to them.

For it must be noted that all the different airs of persons in different conditions are nothing but the natural consequences of the esteem each has for himself relative to others, as is easily recognized upon a little reflection. So the haughty and brutal air is that of a man who esteems himself very much, and correspondingly lacks esteem for others. The modest air is that of a man who esteems himself but little, and highly esteems others. The grave air is that of a man who greatly esteems himself and who wants very much to be esteemed, and the simple air is that of a man who hardly concerns himself with either his own esteem or that of others. Thus, all the different airs, which are nearly infinite, are only effects that various degrees of self-esteem and esteem for others with whom one converses produce naturally on our face, and on all the exterior parts of our bodies. We have already spoken in Chapter IV about this correspondence between the nerves that excite passions inside us and those that indicate them externally by the countenance they impress upon the face.

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[a] "Scientia inflat." 1 Cor. 8:1.

BOOK TWO: PART TWO
Chapter Five

That studious persons are usually so taken with some author that their principal end is to know what he believed, without caring about what must be believed.

There is yet another defect of very great consequence into which studious persons commonly fall, which is that they become completely taken with some author. If there is anything true and good in a book, they are immediately thrown into excess; it is all true, it is all good, it is all admirable. They are pleased to admire even what they do not understand, and they want everyone to admire it with them. They draw their glory from the praises they give these obscure authors because they thereby persuade others that they understand them perfectly, and this is a source of pride to them. They esteem themselves above other men because they think they understand an absurdity of an ancient author, or of a man who perhaps did not understand himself. How many savants have labored to clarify the obscure passages of the philosophers and even of certain poets of antiquity, and how many wits are there who still delight in the critique of an author's word or opinion? But it is appropriate to furnish some proof of what I say.

The question of the immortality of the soul is without doubt a very important question. It is hardly necessary to repeat that philosophers have exerted every effort to resolve it; and although they have written huge volumes to prove, in a rather weak way, a truth one can demonstrate in a few words or a few pages, nonetheless they are excusable. But they are silly indeed to go to great pains to decide what Aristotle believed about it. It seems to me quite useless to those now living to know whether there ever was a man called Aristotle, whether this man wrote the books bearing his name, whether he meant such thing or another in such a passage of his works; this cannot make a man either wiser or happier. But it is very important to know if what he said is true or false in itself.

Therefore, it is useless to know that Aristotle believed in the immortality of the soul, though it is very useful to know that the soul is immortal. However, I do not hesitate to assure you that there are many savants who take more trouble to understand the opinions of Artistotle on this subject than the truth of the thing in itself. For there are those who have written works expressly for explaining what this philosopher believed about it, and they have not done so much to know what must be believed about it.

But though many people have overworked their minds to resolve what Aristotle's opinion was, they have been uselessly exhausted, for there is still no agreement on this ridiculous question. Which shows that Aristotle's votaries are indeed unfortunate in having such an abstruse man to enlighten them, one who even affects obscurity, as he attests in a letter to Alexander.

At various times, then, Aristotle's opinion on the immortality of the soul has been a very great and serious question among the learned. But lest it be imagined that I speak wildly and baselessly, I am obliged to relate here a rather long and tedious passage from La Cerda, in which this author has collected various authorities on this subject, as on a really important question. Here are his words on the second chapter of Tertullian's *De ressurectione carnis:*

> Quaestio haec in scholis utrimque validis suspicionibus agitatur, num animam immortalem, mortalemve fecerit Aristoteles. Et quidem Philosophi haud ignobiles asseveraverunt Aristotelem posuisse nostros animos ab interitu alienos. Hi sunt è Graecis & Latinis interpretibus Ammonius uterque, Olympiodorus, Philoponus, Simplicius, Avicenna, uti memorat Mirandula l. 4 de examine vanitatis Cap. 9. Theodorus, Metochytes, Themistius, S. Thomas 2. contra gentes cap. 79. & Phys. lect. 12. & praeterea 12. Metap. lect. 3 & quodlib. 10. qu. 5. art. I. Albertus, tract. 2. de anima cap. 20. & tract. 3. cap. 13. Aegidius lib. 3. de anima ad cap. 4. Durandus in 2. dist. 18. qu. 3. Ferrarius loco citato contra gentes, & latè Eugubinus l. 9. de perenni philosophia cap. 18. & quod pluris est, discipulus Aristotelis Theophrastus, magistri mentem & ore & calamo novisse penitus qui poterat.
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> In contrariam factionem abiere nonnulli Patres, nec infirmi Philosophi; Justinius in sua Paroenesi, Origines in *φιλοσοφουμένω* & ut fertur Nazianz. in disp. contra Eunom. & Nyssenus p. 2. de anima cap. 4. Theodoretus de curandis Graecorum affectibus l. 3. Galenus in historia philosophica, Pomponatius l. de immortalitate animae, Simon Portius l. de mente humana, Caietanus 3. de anima cap. 2. In eum sensum, ut caducum animum nostram putaret Aristoteles, sunt partim adducti ab Alexandro Aphodis auditore, qui sic solitus erat interpretari Aristotelicam mentem; quamvis Eugubinus cap. 21. & 22. eum excuset. Et quidem unde collegisse videtur Alexander mortalitatem, nempe ex 12. Metaph. inde S. Thomas, Theodorus, Metochytes immortalitatem collegerunt.
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> Porro Tertullianum neutram hanc opinionem amplexum credo; sed putasse in hac parte ambiguum Aristotelem; Itaque ita citat illum pro utraque. Nam cum hic adscribat Aristoteli mortalitatem animae, tamen l. de anima c. 6. pro contraria opinione immortalitatis citat. Eadem mente fuit Plutarchus, pro utraque opinione advocans eundem philosophum in l. 5. de placitis philosop. Nam cap. I. mortalitatem tribuit, & cap. 25. immortalitatem. Ex Scolasticis etiam, qui in neutram partem Aristotelem constantem judicant, sed dubium & ancipitem, sunt Scotus in 4. dist. 43. qu. 2. art. 2. Harveus quodlib. qu. II. & I. senten. dist. I. qu. I. Niphus in Opusculo de immortalitate animae cap. I. & recentes alii interpretes: quam mediam existimationem credo veriorem, sed scholii lex vetat, ut autoritatum pondere librato illud suadeam.

All these citations are represented as genuine on the word of this commentator, because it would be a waste of time to verify them, and because one does not have all the beautiful books from which they are taken. No new ones are added to them, because one does not envy him the glory of having collected them, and because it would be a waste of still more time if one wanted to do it, and one would only be leafing through the catalog of those who have commented upon Aristotle.

One sees, then, in this passage from La Cerda that persons of learning who pass for experts have taken much trouble to understand what Aristotle believed on the immortality of the soul, and there are those who have been capable of doing books expressly on this subject, such as Pomponazzi. For the principal aim of this author in his book is to show that Aristotle believed the soul was mortal. And perhaps there are people who not only took the trouble to know what Aristotle believed about the subject but even considered it very important to know whether, for example, Tertullian and Plutarch or others thought it was Aristotle's opinion that the soul was mortal, as there is good reason to think, even from La Cerda, if one reflects on the last part of the passage just cited, *Porro Tertullianum*, and the rest.

If it is not very useful to know what Aristotle believed about the immortality of the soul, nor what Tertullian and Plutarch thought Aristotle believed about it, the basis of the question, the immortality of the soul, is at least one truth that needs to be known. But there are infinitely many things quite useless to know, and about which it is consequently even more useless to know what the ancients thought and yet we put ourselves to great trouble to divine the opinions of philosophers on similar subjects. One finds books full of these ridiculous studies, and it is these trifles which have excited so many wars of erudition. These vain and irrelevant questions, these ridiculous genealogies of useless opinions, are important subjects of criticism to the savants. They think they have the right to despise those who despise these stupidities, and to treat as ignoramuses those who take pride in being ignorant of them. They think themselves completely possessed of the genealogical history of substantial forms, and the age is ungrateful if it does not recognize their merit. These things show the weakness and vanity of man's mind: that when studies are not governed by reason, not only do the studies not perfect reason, they even obscure, corrupt, and completely pervert it.

It is appropriate to remark here that in questions of faith it is not a mistake to find out what was believed by, for example, Saint Augustine or any other Father of the Church, nor even to find out whether Saint Augustine believed what his predecessors believed, because matters of faith are learned only through tradition, and reason cannot discover them. The oldest belief being the truest, we must try to know what that of the ancients was, and this can be done only by examining the opinion of many persons who came after them at different times. But things depending upon reason are quite otherwise, and it is not necessary to go to the trouble of finding out what the ancients believed about them in order to know what we should believe about them. Yet I do not know by what inversion of reason certain men are shocked if in philosophy we speak differently from Aristotle, but not troubled if we speak differently from the Gospel, the Fathers, and the Councils in theology. It seems to me that it is ordinarily those who cry the loudest against innovations in philosopohy that should be esteemed, and who favor and defend with even more obstinacy certain theological novelties that ought to be detested. For it is not their language we do not approve: completely unknown as it was to antiquity, common usage authorizes it; it is the errors they spread and support under the guise of this equivocal and confused language.

In matters of theology we should love antiquity, because we should love the truth and the truth is found in antiquity. It is necessary for all curiosity to cease once we have grasped the truth. But in matters of philosophy, on the contrary, we ought to love novelty for the same reason that we must always love truth, search after it, and have an incessant curiosity for it. If we believed Aristotle and Plato were infallible, perhaps nothing more would be necessary than to apply oneself to studying them; but reason does not allow us to believe this. On the contrary, reason requires that we judge them more ignorant than the new philosophers, since in our time the world is older by two thousand years, and has more experience than in the ages of Aristotle and Plato, as has already been said. And the new philosophers can know all the truths the ancients have left us, while still discovering many others. Nonetheless, reason no more requires that we believe these new philosophers merely upon their word than the ancients. It requires, on the contrary, that we carefully examine their thoughts, and not agree with them except when we can no longer doubt them without being ridiculously prejudiced against their great knowledge or other qualities of their mind.

BOOK TWO: PART TWO

Chapter Six

The prejudice of commentators.

This excess of prejudice seems much more extreme in those who comment on some author, because those who undertake this work, which in itself seems of little worth to a man of intelligence, imagine that their authors deserve universal admiration. They regard them as making a single person with themselves, and from this point of view, self-love admirably plays its role. They adroitly and profusely praise their authors, they surround them with halos and light, they fill them with glory, knowing full well that this glory reflects on themselves. This idea of greatness not only elevates Aristotle and Plato, in the mind of many people, it also communicates a respect for all those who have commented on them; and the commentator would not have wrought this apotheosis of his author had he not imagined himself enveloped in the same glory.

I nevertheless do not pretend that all commentators praise their authors out of hope for a return; many would be horrified at this thought if they reflected upon it. They praise them sincerely, guilelessly, without thinking about it. But self-love thinks about it for them, without their being aware of it. Men do not feel the heat in their hearts, although it gives life and movement to all the other parts of their bodies. They must touch and feel themselves to be convinced of it, because this heat is natural. The same is true of vanity; it is so natural to man that he does not feel it, and although it gives, so to speak, life and movement to most of his thoughts and plans, it often does so in a way imperceptible to him. It must be felt, touched, and sounded in himself to know that he is vain. Rather, it is not known that it is vanity which impels him to most of his actions, and although self-love knows it, it knows it only in order to disguise it from the rest of the man.

Therefore, a commentator having some relation and a certain bond with the author on whom he comments, his self-love never fails to discover for him subjects for great praise in this author, in order to profit himself from this praise. And that is done in such an adroit, subtle, and delicate way that it is not perceived. But this is not the place to expose the versatility of self-love.

Commentators praise their authors not only because they are predisposed to esteem them, and because of the honor they bring themselves by praising them, but also because it is the custom, and thus it seems to them that it must be done. There are persons who do not have much esteem for certain sciences or certain authors, but do not refrain from commenting upon these authors and these sciences because their position, chance, or even their caprice has involved them in this work. And these people consider themselves obliged to praise the sciences and the authors upon whom they work in a hyperbolic way although the authors be irrelevant and the sciences very lowly and useless.

In fact, it would be quite ridiculous for a man to undertake to comment upon an author he thought to be irrelevant and to apply himself seriously to writing about a matter he thought to be useless. It must be necessary then to preserve his reputation to praise his author and the subject of his book when both are despicable, and that the mistake made in undertaking a mischievous work be repaired by still another mistake. This is what makes learned persons, who comment on various authors, often say contradictory things.

This is also why nearly all their prefaces are not at all in conformity with the truth or common sense. If one comments on Aristotle, he is *the genius of nature*. If one writes on Plato, he is *the divine Plato*. They hardly ever comment on the works of ordinary men: it is always on the works of quite divine men, on men who had been the admiration of their age, who had received quite special inspirations from God. The same is true of the matter they treat: it is always the most beautiful, the most elevated, what must be known.

But so that you do not take me simply at my word, here is how one commentator famous among the savants speaks of the author on whom he comments. It is Averroes speaking of Aristotle. He says in his preface on the Physics of this philosopher that he was the inventor of logic, moral philosophy, and metaphysics, and that he developed them to perfection. "Complevit," he says, "quia nullus eorum, qui secuti sunt eum usque ad hoc tempus, quod est mille et quingentorum annorum, quidquam addidit, nec invenies in ejus verbis errorem alicujus quantitatis, et talem esse virtutem in individuo uno miraculosum et extraneum existit, et haec dispositio cum in uno homine reperitur, dignus est esse divinus magis quam humanus."

Elsewhere he gives him even more pompous and magnificent praise, such as: "1. de generatione animalium. Laudemus Deum qui separavit hunc virum ab aliis in perfectione, appropriavitque ei ultiman dignitatem humanam, quam non omnis homo potest in quacumque aetate attingere." The same person also says in book 1. *Destruct.* disp. 3: "Aristotelis doctrina est SUMMA VERITAS, quoniam ejus intellectus fuit finis humani intellectus: quare bene dicitur de illo, quod ipse fuit creatus, et datus nobis divina providentia, ut non ignoremus possibilia sciri."

In truth, must he not be mad to speak thus? And must not the prejudice of this author have degenerated into extravagance and folly? "The doctrine of Aristotle is the SOVEREIGN TRUTH. No one can equal or even approach his science. It is he whom God has given to us in order to teach us everything that can be known. It is he who renders all men wise, and the better they enter into his thought, the more they know," as he says in another place. "Aristoteles fuit Princeps, per quem perficiuntur omnes sapientes, qui fuerunt post eum: licet differant inter se in intelligendo verba ejus, et in eo quod sequitur ex eis.'' Nevertheless, the works of this commentator have spread throughout Europe and even more distant countries. They have been translated from Arabic into Hebrew, and from Hebrew into Latin, and perhaps even into many other languages, which sufficiently shows how the savants have esteemed them. So one can hardly give a more obvious example than this of the prejudice of persons of learning. For it shows that not only do they often become prejudiced about some author but their prejudice is also communicated to others in proportion to the esteem they have in the world. And so the false praises the commentators give to an author often cause persons of limited intelligence, devoted to reading him, to become preoccupied and fall into an infinity of errors. Here is another example.

An illustrious person among the savants, who founded chairs of geometry and astronomy at Oxford University, begins a book that he was advised to write upon the first eight propositions of Euclid with these words: ''Consilium meum,[a] auditores, si vires et valetudo suffecerint, explicare definitiones, petitiones, communes sententias et octo priores propositiones primi libri Elementorum, caetera post me venientibus relinquere.'' And he finishes it with these: ''Exsolvi per Dei gratiam, domini auditores, promissum, liberavi fidem meam, explicavi pro modulo meo definitiones, petitiones, communes sententias et octo priores propositiones Elementorum Euclidis. Hic annis fessus cyclos artemque repono. Succedent in hoc munus alli fortasse magis vegeto corpore, vivido ingenio,'' and so on. It would not take a mediocre mind an hour to learn by himself, or with the help of the least geometer there is, the definitions, postulates, axioms, and the first eight propositions of Euclid. They hardly need any explanation, and yet here is an author who speaks of this undertaking as if it were exceedingly grand and very difficult. He fears his strength is insufficient, ''si vires et valetudo suffecerint''; he leaves the pursuit of these things to his successors, ''caetera post me venientibus relinquere''; he thanks God that, through a particular grace, he has executed what he promised, ''Exsolvi per Dei gratiam promissum, liberavi fidem meam, explicavi pro modulo meo.'' What? The squaring of the circle? The duplication of the cube? This great man has explained ''pro modulo suo'' the definitions, postulates, axioms, and the first eight propositions of the first book of Euclid's Elements. Perhaps among those who succeed him there will be those of better health and more strength than he to continue this great work. ''Succedent in hoc munus alli FORTASSE magis vegeto corpore, vivido ingenio''; but for him, it is time to rest, ''Hic annis fessus cyclos artemque repono.''

Euclid never considered being so obscure, or saying extraordinary things when he composed his elements as would require the writing of a book of nearly three hundred pages[b] to explain his definitions, axioms, postulates, and his first eight propositions. But this learned Englishman knew well how to inflate the science of Euclid; and if age had permitted him and had he continued with the same vigor, we should presently have had twelve or fifteen thick volumes on the elements of geometry alone, which would be quite useful to all those who wish to learn this science, and which would bring great honor to Euclid.

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[a] Praelectiones 13 in Principium Elementorum Euclidis.

[b] In quarto.

Here then are the bizarre designs of which false erudition makes us capable. This man knew Greek, for we are obligated to him for having provided us a Greek edition of the works of Saint Chrysostom. He may have read the ancient geometers; he knew the historical development of their propositions as well as their genealogy; he had all the respect for antiquity that one should have for truth. And what does this disposition of mind produce? A commentary on the definitions of terms, postulates, axioms, and the first eight propositions of Euclid, very much more difficult to understand and retain, I do not say, than these propositions on which he comments, but than everything that Euclid ever wrote about geometry.

There are many men whom vanity prompts to speak in Greek, and even sometimes in a language they do not understand. For dictionaries, as well as indexes and commonplaces are of great help to some authors. But there are very few people who persist in their Greek in a subject where it is so inappropriate to use it, and it is this which causes me to believe that it is prejudice and an inordinate esteem for Euclid that formed the plan for this book in the imagination of its author.

If this man had used his reason as much as his memory in a matter where reason alone ought to be employed, or if he had had as much respect and love for truth as he had veneration for the author upon whom he commented, it is likely that having spent so much time on such a small subject, he would have agreed that the definitions Euclid gives of a plane angle and parallel lines are defective, that they do not sufficiently explain their nature, and that the second proposition is absurd, since it cannot be proved except by using the third postulate, which one ought not to accept as quickly as one does the second proposition, since by agreeing with the third postulate, which is that from any point a circle can be described of whatever diameter one wishes, one not only agrees that one can draw a line equal to another line from a single point (which Euclid accomplished in a very roundabout manner in this second proposition) but one also agrees that one can draw infinitely many lines of whatever length from any point.

The intention of the majority of commentators is not to clarify their authors and to search for truth. It is to show off their own erudition and to defend blindly even the faults of those upon whom they comment. They do not speak so much in order to understand their author or to make him understood, as to make him admired and themselves along with him. If the author of whom we are speaking had not filled his book with Greek passages, with many names of obscure and little-known authors, and with similar remarks all quite useless for understanding the common notions, definitions of terms, and postulates of geometry, who would have read his book? Who would have admired it? And who would have given its author the title of a learned man and a man of intelligence?

I do not believe that it can be doubted after what has been said that the undiscerning reading of authors often prejudices the mind. Now as soon as a mind is prejudiced, it immediately loses what we call common sense. It can no longer judge sanely about anything having any relation to the subject of its prejudice. Everything it thinks is infected with this prejudice. It can hardly apply itself even to those subjects completely removed from those with which it is preoccupied. Hence a man biased toward Aristotle cannot stomach anything but Aristotle; he wants to judge everything in relation to Aristotle; what is contrary to this philosopher appears false to him; he will always be ready to quote some passage from Aristotle; he will cite them on all sorts of occasions and about all kinds of subjects in order to prove obscure things no one can conceive, and also to prove very clear things even children could not doubt, because Aristotle is to him what reason and clarity are to others.

Likewise, if a man is biased in favor of Euclid and geometry, he will want to relate everything said to him to the lines and propositions of his author. He will not speak to you except in relation to his science—the whole is bigger than its part only because Euclid said so—and he will shamelessly quote him to prove it, as I have sometimes noted. But this is even more common in those who follow authors other than those in the field of geometry, and one very frequently finds in their books long passages in Greek, Hebrew, and Arabic, used to prove completely obvious things.

All this happens to them because the traces the objects of their prejudices have imprinted in their brain fibers are so deep they always remain partially open, and the animal spirits, continually passing through them, keep them that way without permitting them to close. Hence, since the soul is continually constrained to have the thoughts tied to these traces, it becomes, as it were, enslaved to them, and is constantly troubled and disturbed even when, knowing its error, it wishes to try to correct it. Thus, the soul is continuously in danger of falling into a very great number of errors unless it always remains on guard and firmly resolves to observe the rule of which we spoke at the beginning of this work, i.e., never to give complete consent except to those things that are completely clear.

I am not speaking here of the wrong choice the majority make about the kind of study to which they apply themselves. This should be treated in moral philosophy, although it can also be related to what has just been said about prejudice. For when a man throws himself beyond retrieval into the reading of the Rabbis and books in all sorts of the most unknown and consequently the most useless tongues, and consumes his whole life with this, he doubtless does so because of prejudice, and on the basis of an imaginary hope that he will become learned, even though by this means he can never acquire any true science. But because this application to useless study does not so much throw us into error as waste our time, the most precious of our goods, simply to fill us with a stupid vanity, we shall not speak here of those who take it into their head to become learned in all these kinds of base or useless sciences, of which there are very many, usually studied with too much passion.

BOOK TWO: PART TWO

Chapter Seven

I. *The inventors of new systems.* II. *The final error of studious persons.*

<I. *The inventors of new systems.*>

We have just shown the state of the imagination of studious persons who entrust everything to the authority of certain authors. There are still others who are completely opposite to them. These people never respect any authors, no matter what their esteem among the learned. If they once esteemed them, they have completely changed. They set themselves up as authors. They wish to be the inventors of some novel opinion to acquire some reputation in the world by this means, and they assure themselves that by saying something not said before they will not lack admirers.

These sorts of people usually have a very strong imagination. Their brain fibers are such that they can preserve the traces imprinted on them for a long time. Thus, when they have once imagined a system with a certain probability, one cannot disabuse them of it. They jealously retain and preserve everything that can serve in any way to confirm the system; and, on the contrary, they can hardly perceive any objections brought against it, or else they overcome them with some frivolous distinction. They are inwardly pleased with the sight of their work and with the esteem they hope to receive from it. They apply themselves only to the consideration of the image of the truth that their probable opinions imply; they keep this image fixed before their eyes, but they never regard the other aspects of their opinions from an objective viewpoint, for this would uncover their falsity.

One must have great qualities to discover some true system, for it is not enough to have great vivacity and penetration. In addition, there must be a certain comprehensiveness and scope of mind that can envisage a great number of things at the same time. Petty minds with all their quickness and delicacy are too shortsighted to see all that is necessary for the establishment of a system. They are stopped by small difficulties that dishearten them, or certain flashes dazzle them; they do not have a sufficiently broad view to see the entire body of a large subject all at once.

But however broad and however penetrating a mind is, if it is not also free from passion and prejudice, there is nothing to be hoped for from it. Prejudices occupy one part of the mind and infect all the rest of it. Passions confuse all its ideas in a thousand ways and nearly always cause us to see in an object what we desire to find there. Even the passion we have for truth sometimes causes us to be mistaken when it is too ardent. But what prevents us most of all from acquiring a true science is the desire to seem learned.

There is nothing so rare then as finding persons capable of inventing new systems, whereas, on the other hand, it is not very rare to find people who have formed some system according to their own fantasy. We see but very few who study a great deal and reason according to common notions. There is always some irregularity in their ideas, sufficient to show that they have some private system with which we are unacquainted. It is true that not all the books they write do demonstrate it; for when it is a question of writing for the public eye, one is careful about what one says, and often just being attentive is sufficient for avoiding deception. Nonetheless, from time to time we see certain books that bear witness to what I have just said; for there are even people who take pride in noting at the beginning of their books that they have invented some new system.

The number of inventors of new systems is also very much increased by those who have become preoccupied by some particular author. For it often happens that not having encountered any thing true or solid in the opinions of the authors they have read, they first of all develop a great distaste and contempt for all kinds of books, and then they imagine a probable opinion they embrace with all their heart, fortifying themselves in it in the way just explained.

But when this great ardor they have had for their own opinion has abated, or when the intention to demonstrate it before the public has obliged them to examine it with a more precise and serious attention, they discover its falsity and abandon it, but on condition that they will never take up any other opinion and will absolutely condemn all those who pretend to have discovered some truth.

II. An important error of studious persons.

As a result, the final and most dangerous error into which many studious persons or scholars fall is that they pretend that nothing can be known. They have read many ancient and modern books in which they have found no truth; they have had many beautiful thoughts that, after having carefully examined them, they found to be false. From this they conclude that all men are like them, and that if those who think they have discovered certain truths had given them serious reflection, they would have found themselves to be mistaken just as they have. This is sufficient for them to condemn all others without undertaking a more careful examination of what they say; because if they did not condemn them, this would be in some way to agree that they are more intelligent than they, and this does not seem very likely to them.

They therefore regard as biased all those who affirm something as certain, and they do not wish anyone to speak of the sciences as clear truths that one cannot reasonably doubt, but only as opinions of which it is good not to be ignorant. Yet these people should consider that although they have read a very large number of books, nonetheless they have not read all of them, or have not read them with all the attention necessary for understanding them well. And they should also consider that even if they have had many beautiful thoughts they have later found to be false, nonetheless they have not had all possible thoughts, so it might well be that others will realize them rather than they. And it is not necessary, absolutely speaking, that these others have more intelligence than they, if this shocks them, for it suffices that they have been more fortunate. They are not wronged if we say we know clearly what they are ignorant of, since we also say that many ages have been ignorant of the same truths, not for lack of intelligent minds but because these good minds were not lucky enough to realize them.

Let them not be upset then if someone sees clearly, and speaks as he sees. Let them apply themselves to what is said to them, if their mind is still capable of application after all their errors, and let them judge afterward—they are permitted to do so. But let them be silent if they will not examine anything. Let them reflect a little whether the answer they normally give to most of the things we ask them, ''no one knows that, no one knows how that happens,'' is not unwise. For in order to answer in this way they must of necessity believe they know everything all men know or can know. For if they did not think of themselves in this way, their answer would be even more absurd. And why should they find it so difficult to say they know nothing about something, when in some situations they readily acknowledge they know nothing? And why is it necessary to conclude that all men are ignorant because they are inwardly convinced that they themselves are ignorant?

There are, then, three types of persons who apply themselves to study. The first are those who are inappropriately biased with regard to some author or some useless or false science. The second are preoccupied with their own fantasies. Finally, the last, who normally come from the two other types, are those who fancy they know everything that can be known, and who, persuaded that they know nothing with certainty, conclude generally that no one can know anything with certainty and look upon everything that is said to them as a matter of simple opinion.

It is easy to see that all the faults of these three types of persons depend upon the properties of the imagination I have explained in the preceding chapters, and that all this happens to them only through prejudice, which closes their minds and does not permit them to perceive any objects other than those of their preoccupation. Their prejudices might be said to do to their minds what the ministers of princes do with respect to their masters. For just as these people do everything they can to ensure that only those who do so in their interest, or who cannot dispossess them of their master's favor, speak to their masters, so the prejudices of the three types of persons of whom I have spoken do not allow their mind to fix its attention on pure and unmixed ideas of objects. Instead they disguise them and cover them in their own garments and, once they are so hidden, present them to their minds, so that it is quite difficult for the mind to be corrected and to recognize its errors.

BOOK TWO: PART TWO

Chapter Eight

I. Effeminate minds. II. Superficial minds. III. Persons of authority. IV. Those who perform experiments.

It seems to me that what has just been said enables us generally to recognize the defects of the imagination of studious persons and the errors to which they are most subject. As there are hardly any besides these people who take the trouble to search for truth, and indeed everyone relies upon them in this respect, it seems that we could finish the second part here. However, it is appropriate to say something about the errors of other men, because it will be useful to be aware of them.

I. Effeminate minds.

Whatever flatters the senses greatly affects us, and we notice whatever affects us in proportion to its effect. Therefore, those who abandon themselves to all kinds of quite sensible and quite pleasant diversions are incapable of penetrating any truth containing any significant difficulty. This is because the finite capacity of their minds is completely or at least largely filled with their pleasures.

Most of the nobility, courtiers, rich people, the young, and those called fine minds, being constantly engaged in amusements and studying nothing but the art of pleasure through whatever flatters concupiscence and the senses, gradually acquire such a delicacy in these matters, or such a softness, that they can very often be said to be of an effeminate state of mind rather than fine minds, as they pretend to be. For there is a great difference between true finesse of mind and softness, although the two are usually confused.

Fine minds are those who notice the slightest differences among things through the use of their reason alone. They predict effects that depend upon hidden, unusual, and invisible causes; in short, they are those who penetrate farthest into the subject they are considering. But soft minds have only a false delicacy; they are neither quick nor perceptive; they do not see the effects of even the crudest and most palpable causes. In short they cannot either understand or penetrate anything, but they are extremely sensitive about manners and style. An ill-spoken phrase, a provincial accent, a small grimace irritates them infinitely more than a confused mass of bad arguments. They cannot recognize a mistake in an argument, but they are perfectly well aware of a false step or an ungainly gesture. In a word, they have a perfect intelligence so far as sensible things are concerned, because they have made continual use of their senses; but they do not have true intelligence about things depending upon reason, because they have almost never used their own.

Nevertheless, these are the sorts of people who have the most esteem in the world, and who most easily acquire the reputation of having a fine mind. For when a man speaks with a free and easy air, when his expressions are pure and well chosen, when he uses figures of speech that flatter the senses and excite the passions in an imperceptible manner, even if he utters nothing but stupidities and though there be nothing good or true behind his beautiful words, he is acting according to the common notion of a fine, good, and agile mind. We do not perceive that this is only a soft and effeminate mind, merely glittering with false lights that never illuminate anything, which persuade only because we have ears and eyes. not because we have reason.

Furthermore, I do not deny that all men feel the effect of this weakness I have just noted in some of them. There is no one whose mind is not affected by the impression of his senses and passions and, consequently, who is not somewhat constrained by manners. All men differ in this respect only by degree. But the explanation of why I attribute this fault to some men in particular is that some see clearly that it is a fault and try to correct it, whereas those of whom I have just spoken regard it as a very advantageous quality. So far are they from recognizing that this false delicacy is an effect of effeminate softness, and the source of an infinite number of maladies of the mind, that they imagine it to be an effect and a mark of the beauty of their genius.

II. Superficial minds.

We can add to those of whom we have just spoken a very large number of superficial minds who never penetrate deeply into anything, and who only confusedly perceive the differences between things. This is not their fault, as it is with those whom we have just discussed, for in this case it is not sensible diversion that makes their minds narrow; rather, they are naturally so. This narrowness of mind does not arise from the nature of the soul, as one might imagine. It is sometimes caused by a great deficiency or slowness of the animal spirits, sometimes by the inflexibility of the brain fibers, and sometimes also by an overabundance of spirits and blood, or by some other cause that need not be known.

There are, then, two sort of minds. The one easily notes the differences among things, and these are good minds. The other imagines and assumes a resemblance among things, and these are superficial minds. The first has a brain fit to receive clear and distinct traces from the object it considers; and because it is very attentive to the ideas of these traces, it sees these objects in detail and nothing escapes it. But superficial minds receive only weak and confused traces from objects. They see them only in passing, as it were, from far away and very confusedly. Hence, these objects appear similar to them, as do the faces of those one sees from afar, because the mind always assumes resemblance and equality, unless it is obliged to recognize difference and inequality, for reasons I shall give in the third book.

Most public speakers, all those we call great orators, and even many who express themselves with much ease, though they may speak but seldom, are of this kind. For it is extremely rare for those who meditate seriously to be able to explain well the things upon which they have meditated. Ordinarily they hesitate when undertaking to speak of these things, because they have scruples about using terms that raise a false idea in others. Being ashamed to speak simply for the sake of speaking, as many people do who speak cavalierly about all things, they have great difficulty in finding words to express unusual thoughts well.

III. Persons of authority.

Although I have infinite respect for persons of piety, theologians, the aged, and generally for all those who have justly acquired great authority over other men, nevertheless I think myself obliged to say that they often believe themselves infallible because the world listens to them with respect, that they make but little use of their minds to discover speculative truths, and that they too freely condemn everything it pleases them to condemn, without having given it sufficient attention. Not that we blame them for not having applied themselves sufficiently to sciences that are not very necessary—it is permissible not to study them, and even to despise them. But they ought not to judge them on the basis of fantasy and ill-founded suspicions. For they should consider that the gravity with which they speak, the authority they have acquired over the minds of others, and their practice of confirming what they say with some passage from Sacred Scripture, will surely throw those who listen to them with respect into error, because not being capable of examining things thoroughly, they are victimized by manners and appearances.

When error wears the livery of truth, it is often more respected than truth itself, and this false respect has very dangerous consequences.[a] "Pessima res est errorum apotheosis, et pro peste intellectus habenda est, si vanus accedat veneratio." Hence, when certain people, either through a false zeal, or a love for their own thoughts, have used Sacred Scripture to establish a false principle of physics or metaphysics, they have often been listened to as though they were oracles by people who have believed them on the basis of their word, because of the respect they owe to holy authority. But it has also happened that some evil minds have used it as a basis for condemning religion. So that through a complete perversion, Sacred Scripture has been the cause of error in some, and truth has been the motive and the source of impiety for others. Great care must be taken, then, as the author just cited says, not to search for dead things among the living, and not to pretend by the efforts of our own minds to discover in Sacred Scripture what the Holy Spirit did not wish to declare in it. "Ex divinorum & humanorum

[a] Chancellor Bacon.

malesana admixtione,'' he continues, ''non solum educitur Philosophia phantastica, sed etiam Religio haeretica. Itaque salutare admodum est si mente sobria fidei tantum dentur, quae fidei sunt.'' Therefore, all persons who have authority over others should make decisions only after having given them a great deal more thought, to the extent that their decisions are more likely to be followed. And theologicans in particular must take care not to cause condemnation of religion through a false zeal, either for making themselves famous or for making their opinions popular. But because it is not up to me to tell them what they ought to do, let them listen to Saint Thomas, their master,[a] who, being questioned by his superior in order to ascertain his views on some points, responded to him with Saint Augustine in these terms:

> It is very dangerous to speak decisively on matters that are not questions of faith, as if they were. Saint Augustine teaches us this in the fifth book of his *Confessions*. When I see, he says, a Christian who does not know the opinion of the philosophers concerning the heavens, the stars, and the movement of the sun and moon, and who confuses one thing with another, I leave him with his opinions and his doubts; for I do not see that ignorance about the position of bodies and the different arrangements of matter can harm him, provided he does not have unworthy views about you O Lord, who have created us all. But he is mistaken if he is persuaded that these matters affect religion, and if he is bold enough to be opinionated about what he does not know. The same saint explained himself still more clearly on this subject in the first book on the literal explanation of Genesis, in these terms: A Christian must take great care not to speak of these things as if they were from Sacred Scripture. For an infidel, who hears him utter these extravagances having no appearance of truth, would be unable to prevent himself from laughing at them. Hence, the Christian would receive nothing but confusion from them, and the infidel would be given bad example. Yet what gives rise to the most trouble in these instances is not that we see that a man is mistaken: it is that the infidels we are trying to convert falsely imagine, to their inevitable detriment, that our authors have such extravagant opinions, and consequently they condemn them and despise them as ignorant men. It seems to me much more appropriate, then, not to affirm as dogmas of the faith the commonly received and accepted opinions of philosophers, which are not contrary to our faith, although one can sometimes use their authority to have these dogmas accepted. Nor is it necessary to reject these opinions as contrary to our faith, lest occasion be given to the wise men of this world for condemning the holy truths of the Christian religion.

The majority of men are so careless and unreasonable that they make no distinction between the word of God and that of man when they are joined together; as a result, they fall into error by approving them together, or into impiety by indiscriminately condemning them. It is very easy to see the cause of these latter errors, and to see that they depend upon the connection between ideas explained in chapter five, and it is not necessary to stop here to explain them further.

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[a] *Opusc.* 9: ''Multum autem nocet talia quae ad pietatis doctrinam non spectant, vel asserere vel negare, quasi pertinentia ad sacram doctrinam. Dicit enim Aug. in 5. Confess. cum audio Christianum aliquem fratrem ista, quae Philosophi de caelo, aut stellis, & de solis & lunae motibus dixerunt, nescientem, & aliud pro alio sentientem, patienter intueor opinantem hominem; nec illi obesse video, cum de te, Domine Creator omnium nostrum, non credat indigna, si forte situs, & habitus creaturae corporalis ignoret. Obest autem, si haec ad ipsam doctrinam pietatis pertinere arbitretur, & pertinacius affirmare audeat quod ignorat. Quod autem obsit, manifestat Aug. in I. super Genes, ad litteram. Turpe est, inquit, nimis, & perniciosum, ac maxime cavendum ut Christianum de his rebus quasi secundum christianas literas loquentem, ita delirare quilibet infidelis audiats, ut quemadmodum dictitur toto caelo errare conspiciens, risum tenere vix possit. Et non tamen molestum est, quod errans homo videatur: sed quod Autores nostri ab eis qui foris sunt, talia sensisse creduntur, & cum magno eorum exitio, de quorum salute fatagimus, tanquam indocti reprehenduntur atque respuuntur. Unde mihi videtur tutius esse, ut haec quae Philosophi communes senserunt, & nostrae fidei non repugnant, neque esse sic asserenda, ut dogmata fidei, licet aliquando sub nomine Philosophorum introducantur, neque sic esse neganda tanquam fidei contraria, ne sapientibus hujus mundi contemnendi doctrinam fidei occasio praebeatur.''

IV. Those who perform experiments.

It seems appropriate to say something here about chemists and generally about all those who spend their time performing experiments. These are men who search after truth; one normally accepts their opinions without examining them. Therefore, their errors are that much more dangerous, because they communicate them to others with greater ease.

It is doubtless better to study nature than to study books; visible and sensible experiments certainly prove much more than the reasonings of men. And one can find no cause to blame those in their position engaged in the study of physics, trying to become practiced in it through continual experiments, provided they apply themselves most in those sciences most necessary to them. Therefore, do not blame experimental philosophy, nor those who cultivate it, but only their defects.

The first is that it is normally not the light of reason that determines the order of their experiments but merely chance. This is why they become hardly more enlightened or wiser from them after having spent a great deal of their time and resources.

The second is that they are preoccupied with curious and unusual experiments rather than with more common ones. Yet it is clear that, the most common being the simplest, we must begin with them before going on to apply ourselves to more complex ones, which depend upon a greater number of causes.

The third is that they search with ardor and carefully seek experiments that profit them, and neglect those serving only to enlighten the mind.

The fourth is that they do not take sufficient care to note all the particular circumstances such as time, place, and the quality of the drugs they use, even though the least of these circumstances is sometimes capable of preventing the desired effect. For it must be observed that all the terms physicists use are equivocal; the word wine, for example, signifies as many different things as there are different soils, seasons, and ways of making and preserving wine. As a result we might even say in general that no two casks of wine are completely alike; thus when a physicist says, in order to perform this experiment, take wine, we know what he wants only in a very confused way. This is why we must be very cautious in experiments, and not descend to more complex ones without completely understanding the explanation of the simpler and more ordinary ones.

The fifth defect is that from a single experiment they draw too many conclusions. On the contrary, many experiments are nearly always necessary to draw a single conclusion, even though a single experiment can help in deriving many conclusions.

Finally, most physicists and chemists consider only the particular effects of nature. They never ascend to the primary notions of things that compose bodies.

But it is indubitable that we cannot clearly and distinctly know the particular things of physics without the more general, and without ascending even to the level of metaphysics. Finally, they often lack courage and endurance, and give up because of fatigue and expense. There are still many other defects in the persons of whom we speak, but we do not pretend to cover them all here.

The causes of the defects I have noted are: (1) insufficient application, (2) the properties of the imagination explained in chapter five of the first part of this book, and in the second chapter of this part, and (3) above all that we judge the differences among bodies and the changes that happen to them only on the basis of the sensations we have of them, as I have explained in the first book.

BOOK TWO: PART THREE

THE CONTAGIOUS COMMUNICATIONS OF STRONG IMAGINATIONS

Chapter One

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I. Our disposition to imitate others in all things, which is the source of the communication of errors depending on the power of the imagination. II. Two major causes that strengthen this disposition. III. What a strong imagination is. IV. There are many kinds of strong imaginations. Fools and those who have a strong imagination in the sense intended here. V. Two important defects in those with strong imaginations. VI. The power they have of persuading others and of imposing upon them.

After having explained the nature of the imagination, the defects to which it is subject, and how our own imagination throws us into error, all that remains to be discussed in the second book is the contagious communication of strong imaginations, i.e., the force certain minds have over others for involving them in their errors.

<I. *Our disposition to imitate others in all things, which is the source of the communication of errors depending on the power of the imagination.*>

Strong imaginations are extremely contagious; they dominate weaker ones, gradually giving them their own orientation, and imprinting their own characteristics on them. Therefore, since those who have a strong and vigorous imagination are completely unreasonable, there are very few more general causes of men's errors than this dangerous communication of the imagination.

To understand what this contagion is, and how it is transmitted from one person to another, it is necessary to know that men need one another, and that they were created that they might form several bodies, all of whose parts have a mutual correspondence. To maintain this union God has commanded us to have charity for one another. But because self-love can gradually destroy charity, and break the bond of civil society, it was appropriate for God to preserve it by also uniting men through natural ties, which subsisted without charity and appealed to self-love.

These natural ties we share with beasts consist in a certain disposition of the brain all men have to imitate those with whom they converse, to form the same judgments they make, and to share the same passions by which they are moved.

And this disposition normally ties men to one another much more closely than charity founded upon reason, because such charity is very rare.

When a man does not have this disposition of the brain enabling him to enter into our sensations and passions, he is by his nature incapable of binding himself to us, and of making up the same body with us. He resembles those irregular stones for which there is no place in a building because they cannot be joined to the others.

> Oderunt hilarem tristes, tristemque jocosi.
> Sedatum cleres, agilem gnavumque remissi.

More virtue than might be thought is necessary to maintain relations with those who have no regard for our passions and who have feelings contrary to ours. And this is not completely without reason; for when a man has reason to be a state of sadness or joy, it is to a certain extent an insult to him not to share his feelings. If he is sad, we should not present ourselves before him with a gay and mirthful air, which signifies joy and forcefully impresses the impulses thereof in his imagination. For this is to wish to drive him from the state most suitable and agreeable to him, sadness itself being the most agreeable of all passions to a man suffering from some misery.

II. Two principal causes that strengthen our disposition to imitate others.

All men then have a certain disposition of the brain that naturally inclines them to behave in the same way as some of those with whom they live. Now, this disposition has two principal causes that support and strengthen it. One is in the soul, the other in the body. The first consists principally in the inclination all men have for grandeur and high position, and for obtaining an honorable place in others' minds. For it is this inclination that secretly excites us to speak, walk, dress, and comport ourselves with the air of people of quality. This is the source of new styles, the instability of living languages, and even of certain general corruptions of mores. In short, this is the principal source of all the extravagant and bizarre novelties founded not upon reason, but only upon men's fantasies.

The other cause that strengthens our disposition for imitating others, of which we must especially speak here, consists in a certain impression made by persons of strong imagination upon weak minds, and upon tender and delicate brains.

III. What a strong imagination is.

By a strong and vigorous imagination I mean that constitution of the brain which renders it capable of having very deep vestiges and traces that so occupy the soul's capacity that they prevent it from focusing its attention on things other than those represented by these images.

IV. There are two kinds of strong imaginations.

There are two kinds of people who have a strong imagination in this sense. The first receive these deep traces from an involuntary and disordered impression of the animal spirits. And the others, of which I principally wish to speak, receive them from the disposition found in their brain substance.

It is clear that the first sort are completely insane, since they are forced by the natural union between their ideas and these brain traces to think of things not thought of by others with whom they converse. This makes them incapable of speaking to the point and correctly answering questions put to them.

Of these there are an infinity of kinds differing only in degree, and it can be said that all those agitated by some violent passion are among their number since, during the period of their emotion, the animal spirits impress the traces and images of their passion with so much strength that they are incapable of thinking about anything else.

But it should be noted that all these kinds of people are incapable of corrupting the imagination of even the feeblest minds, or of the softest and most tender brains, for two main reasons. First, being unable to conform their answers to the ideas of others, they cannot persuade them of anything. Second, the disorder of their mind is so obvious that everyone holds their opinions in contempt.

It is true, however, that impassioned people raise passion in us, and that they cause impressions in our imagination that resemble those by which they are affected. But because their distraction is so obvious, we resist these impressions and usually rid ourselves of them within a short time. They fade away by themselves when no longer maintained by the cause that produced them, that is, when these deranged people are no longer in our presence, and when our visible impression of the characteristic passion formed in their faces no longer produces any change in our brain fibers or any agitation in our animal spirits.

Here I wish to examine only that kind of strong and vigorous imagination consisting in a disposition of the brain for receiving very deep traces from the weakest and least active objects.

It is not a defect to have a brain that can imagine things strongly, and that receives very distinct and vivid images from the least important objects, provided that the soul always remains the master of the imagination and that these images are imprinted at the direction of the soul and erased when it wishes. On the contrary, this is the origin of subtlety and strength of mind. But when the imagination dominates the soul, and when without attention to the direction of will these traces are formed because of the disposition of the brain and by the action of objects and the animal spirits, it is clear that this is a very bad quality and a sort of madness. Let us try to understand the character of those who have such imaginations.

To do this it is necessary to remember that the capacity of the mind is very limited, that there is nothing which so quickly occupies its capacity as the sensations of the soul, and in general all our perceptions of objects that strongly affect us, and that the deep traces of the brain are always accompanied by sensations or by these other perceptions that strongly affect us. In view of this, it is easy to understand the true characteristics of the mind of those who have strong imaginations.

V. Two important defects in those with strong imaginations.

The first such characteristic is that these persons are incapable of making sound judgments about even slightly difficult and intricate things, because their mind's capacity is occupied with ideas tied by nature to these very deep traces in the brain, and therefore they are not free to think of many things at once. Now, in complex questions, the mind must be able to survey the ideas of very many things with a quick and sudden movement, and <it must> recognize all the relations and connections needed to resolve these questions with a direct awareness.

Everyone knows from his own experience that we are incapable of applying ourselves to some truth while we are agitated by passion, or while we are feeling rather severe pain, because the deep traces imprinted on the brain then occupy the capacity of the mind. Hence, since those of whom we are speaking have deeper traces of the same objects than others, as we suppose, they cannot have as much scope of mind or comprehend as many things as they do. Thus, the first defect of these people is that they have a small mind, and it is smaller to the extent that their brain receives deeper traces from the least important objects.

The second defect is that they are visionaries, but in a delicate way that is rather difficult to recognize. Ordinary men do not think of them as visionaries, and only men of enlightened and accurate mind are aware of their visions and the derangement of their imagination.

In order to understand the origin of this defect, we must again recall what was said at the beginning of this second book, namely, that in regard to what happens in the brain, the senses and the imagination differ only by degree, and it is the breadth and depth of the brain traces that cause the soul to sense objects. These traces enable the soul to judge objects as present and capable of affecting it, and finally as sufficiently near to cause it to sense pain and pleasure. For when the traces of an object are slight, the soul only imagines the object, it does not judge it as present or regard it as of significant size and importance. But to the extent that these traces become larger and deeper, the soul judges the object as larger and more important, as drawing closer to us, and finally as being capable of affecting and hurting us.

The visionaries of whom I speak are not so insane as to believe that they see absent objects before their eyes. Their brain traces are not yet that deep—they are only half mad. And if they were completely insane we should not have to speak of them here, because everyone would perceive their derangement, and we could not be lead into error by it. They are not visionaries of the senses but only of the imagination. Madmen are visionaries of the senses, because they do not see things as they are, and because they often see things that are not. But those of whom I speak here are visionaries of the imagination, because they imagine things to be quite different than they are, and because they even imagine some things that do not exist. Nevertheless, it is clear that the visionaries of sense and of the imagination differ only by degree, and that they often pass from one state to the other. For this reason we should represent the mental illness of the latter by comparison to that of the former, which is more sensible and causes a greater impression on the mind, because in things that differ only by degree we should always explain the less sensible by the more sensible.

The second defect of those who have a strong and vigorous imagination is, therefore, that they are visionaries of the imagination, or simply visionaries, for one calls those who are visionaries of the senses by the term madmen. Here, then, are the bad qualities of visionary minds.

These minds are excessive in all instances; they raise up what is low; they exaggerate what is small; they bring near what is remote. Nothing appears to them as it is. They wonder at everything, they exclaim about everything without judgment or discernment. If they are disposed to fear by their natural constitution, I mean if their brain fibers are extremely delicate, their animal spirits are in short supply, without strength and without agitation, with the result that they cannot communicate the necessary movements to the rest of the body, and they are frightened by the slightest thing and tremble at the fall of a leaf. But if they have an abundance of spirits and blood, which is more normal, they feed themselves with vain hopes and, abandoning themselves to their imagination, fecund with ideas, they build castles in Spain, as the saying goes, with great satisfaction and joy. They are vehement in their passions, biased in their opinions, and always conceited and very self-satisfied. When they get it into their heads to pass for fine wits and set themselves up as authors (for there are authors of all kinds, visionaries and others), then what extravagances, wanderings, and irregular movements we see! They never imitate nature; everything is affected, forced, and exaggerated. They do not walk, they bound; they walk only in cadence, and everything is in metaphors and hyperbole. When they wish to become pious, and to arrive there by their fantasies, they enter completely into the spirit of the Jew and Pharisee. They ordinarily stop at the surface of things, and are completely occupied with visible ceremonies and rituals of little importance. They become scrupulous, timid, and superstitious. Everything becomes a matter of faith, everything is essential to them, except what is truly a matter of faith and what is really essential; for quite often they neglect what is most important in the gospel—justice, mercy and faith—because their mind is occupied with less essential duties. But there would be too many things to say about this. It is sufficient, in order to be persuaded of their defects, and to note many other things about them to reflect but a little on what happens in ordinary conversations.

People with strong and vigorous imaginations have still other qualities requiring a full explanation. Until now we have spoken only of their defects; it is only fair to speak now about their advantages. They have one advantage among others that is especially relevant to our subject, because it is through this advantage that they dominate ordinary minds, make them share their own ideas, and communicate to them all the false impressions by which they are affected.

VI. That those of strong imagination are very persuasive.

This advantage consists in a facility for expressing themselves in a strong and vivid, though unnatural, manner. Those who imagine things strongly express them strongly, and all those whom they persuade are convinced by their air and through sensible impression, rather than by the strength of arguments; for the brain of those with a strong imagination receives, as I have said, deep traces from the subjects they imagine, and these traces are naturlly followed by a great turbulence of the spirits, readying their whole body to express their thoughts in a quick and lively manner. Hence, their facial expression, their tone of voice, and the turn of their words that animates their expression prepare those listening to them and looking at them to be attentive, and to mechanically receive the impression of the image agitating them. For, in short, a man penetrated by what he says usually impresses others, as an impassioned man always arouses the emotions of others. Even though his rhetoric is often irregular, it is nonetheless very persuasive, because his presence and manner make themselves felt, and thus act upon the imagination of men more vividly than the strongest discourses coldly delivered, because these discourses do not flatter their senses and do not strike their imagination.

Persons of imagination therefore have the advantage of being able to please, affect, and persuade, because they form very vivid and sensible images of their thoughts. But there are still other causes that contribute to their facility in winning over minds. For they usually speak only about simple subjects within the capacity of ordinary minds. They use only expressions and terms that arouse the confused notions of sense, always very strong and affective. They treat of great and difficult matters only in a vague way and in commonplaces, without taking the risk of entering into detail and without committing themselves to principles, either because they do not understand these matters or because they fear that being at a loss for words they will become confusing and tire the minds of those not capable of close attention.

It is now easy to judge from what has just been said that disorders of the imagination are extremely contagious, and that they insinuate and spread themselves in the majority of minds with great ease. But because those who have a strong imagination are usually the enemies of reason and common sense, because of the pettiness of their minds and the visions to which they are subject, we can also recognize that there are very few more general causes of our errors than the contagious communication of the disorders and ills of the imagination. But it is still necessary to prove these truths through examples and experiences known to everyone.

BOOK TWO: PART THREE

Chapter Two

General examples of the strength of the imagination.

Very common examples of this communication of the imagination are found in children with regard to their fathers (and still more in daughters with regard to their mothers), servants to their masters, maids to their mistresses, students to their teachers, courtiers to kings, and generally all inferiors with regard to their superiors, provided, however, that the fathers, masters, and other superiors have some strength of imagination. For without it, the children and servants might receive no significant impression from the weak imagination of their fathers or masters.

The effects of this communication may likewise be found in people of equal position. But this is not so common, because among them one does not encounter that particular respect which disposes minds to receive the impressions of strong imaginations without question. Finally, we even find these defects created in superior people by their inferiors, for the latter sometimes have such a vivid and dominating imagination that they twist the minds of their masters and superiors as they please.

It will not be difficult to understand how fathers and mothers cause very strong impressions on their children's imaginations if we consider that these natural dispositions of our brain inclining us to imitate those with whom we live and to share their feelings and passions are stronger in children with regard to their parents than in all other people. Many reasons can be given for this. First, they share the same blood. For just as parents very often transmit to their children dispositions to certain hereditary illnesses, such as gout, gallstones, madness, and generally all those that they do not contract by accident, or that were not caused solely and uniquely by some unusual fermentation of the humors, such as fevers and certain others (for it is obvious that these cannot be hereditary), so they imprint the dispositions of their brain in their children and give a certain turn to their imaginations that makes them completely susceptible to the same feelings.

The second reason is that normally children have very little to do with the rest of men, who might sometimes trace different impressions in their brain and to some extent disrupt the constant force of the paternal impression. For just as a man who has never left his country usually imagines that the mores and customs of foreigners are completely contrary to reason because they are contrary to the custom of his city, by which he allows himself to be guided, so a child who has never left the paternal house imagines that the feelings and manners of his parents are the universal rule; or rather it never occurs to him that there could be other principles of reason or virture besides the imitation of them. He therefore believes everything he hears them say, and he does everything he sees them do.

But this parental impression is so strong that it acts not only on the imagination of children but even on the other parts of their bodies. A young boy walks, talks, and makes the same gestures as his father. A little girl dresses like her mother, walks like her, and speaks as she does; if the mother lisps, so does the daughter; if the mother has some unusual motion of the head, the daughter adopts it. In short, children imitate their parents in everything, in their defects and their affectations as well as in their errors and vices.

There are yet many other causes that increase the effect of this impression. The main ones are the authority of the parents, the dependence of children upon them, and the mutual love they have for each other. But these causes are common to courtiers, servants, and generally to all inferiors, as well as to children. We shall explain them with the example of courtiers.

There are men who judge of what is not apparent by what is, of the grandeur, strength, and capacity of mind hidden from them, through the gallantry, titles, and riches known to them. They often measure the one by the other. And the dependence men have on the great, the desire to share in their greatness, and the perceptible glamour surrounding them, often causes men to render divine honors to mere mortals, if I might so speak. For if God gives authority to princes, men give them infallibility, but an infallibility not limited to certain subjects, nor to certain occasions, and not attached to certain ceremonies. The great know everything by nature; they are always right, even if they decide questions about which they know nothing. To examine what they propose is not to know how to live, to doubt them is to lack respect, to condemn them is to rebel, or at least to exhibit oneself as foolish, extravagant, and ridiculous.

But when the great do us the honor of liking us, it is no longer simply obstinancy, conceit, or rebellion; it is now ingratitude and perfidy not to surrender blindly to all their opinions. It is an irreparable fault that makes us forever unworthy of being in their good graces. This is why courtiers, and as a necessary consequence nearly all people, subscribe without thought to all the opinions of their ruler, even to the point of frequently yielding to their caprices and whims concerning the truths of religion.

England and Germany furnish us with only too many examples of these inordinate submissions of peoples to the impious wills of their princes. The histories of recent times are full of them; and we have sometimes seen even aged person change their religion four or five times because of the various changes of their princes.

The kings and even the queens of England have the "right of governing over all the states of their realms, whether ecclesiastical or civil, in all causes."[a]

They approve the liturgies, the calendar of feasts, and the way in which one must administer and receive the sacraments. They ordain, for example, that one does not adore Jesus Christ when one receives communion, although one must still receive the sacrament on one's knees according to the ancient custom. In a word, they change everything in their liturgies to make them conform to the new articles of their faith, and they also have the right to judge these articles with their parliament, as the pope does with the council, as one can see from the statutes of England and Ireland, drawn up at the beginning of the reign of Queen Elizabeth. Finally, it can be said that the kings of England have even more power over the spiritual than the temporal lives of their subjects, because these miserable peoples, these children of the earth, are concerned less with preserving the faith than with the preservation of their own goods, and therefore they easily adopt all the opinions of their princes provided their temporal and material interests are not contrary to them.

The religious revolutions that have occurred in Sweden and Denmark could again serve to prove to us the power some minds have over others, but all these revolutions have also had many other quite significant causes. These surprising changes are indeed proof of the contagious communication of the imagination, but they are proofs too vast and sweeping. They astonish and confuse the mind more than they enlighten it, because there are too many causes that concur in the production of these great events.

If courtiers and all other men often abandon certain truths, essential truths, truths necessary to uphold or be lost for eternity, it is obvious they will not risk defending abstract truths of but little certainty and utility. If the religion of the prince is the religion of his subjects, the reason of the prince will also be the reason of his subjects. And so the views of the prince will always be the fashion, his pleasures, passions, games, words, habits, and generally all his actions will set the style. For if the prince himself is the essential fashion, it will almost never happen that he does something which does not become fashionable. And since all irregularities of style are always pleasant and beautiful, we need not be surprised if princes so strongly affect the imagination of other men.

If Alexander tosses his head, his courtiers toss theirs. If Dionysius the Tyrant applies himself to geometry upon the arrival of Plato in Syracuse, geometry then becomes fashionable, and the palace of this king, says Plutarch, is immediately filled with dust by so many people tracing figures. But as soon as Plato becomes angry with the tyrant, and this prince tires of study and abandons himself anew to his pleasures, his courtiers immediately do the same thing. It seems, continues this author,[b] that they are enchanted, and that a Circe transforms them into different men. They pass from an inclination toward philosophy to one for debauchery, and from a horror of debauchery to one of philosophy. Thus can princes change vices into virtues, and virtues into vices, and a single word from them is capable of completely changing their ideas. A single word, a gesture, or a movement of his eyes or his lips is all that is needed to construe science and wisdom as base pedantry, or temerity, brutality, and cruelty as great courage, or impiety and free thought as strength and freedom of mind.

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[a] Art. 37 of the Religion of the Anglican church.

[b] Moral works. How one can distinguish the flatterer from a friend.

But this, as well as all I have just said, presumes that these princes have a strong and lively imagination; for if it is feeble and languid, they could not animate their discourse, nor give it that peculiar turn and strength that subdues and invincibly defeats feeble minds.

If the strength of the imagination alone and without any help from reason can produce such surprising effects, there is nothing so bizzare or extravagant of which it cannot persuade people when supported by some probable arguments. Here are some proofs of this.

An ancient author[a] reports that in Ethiopia the courtiers crippled and deformed themselves, amputated limbs, and even killed themselves to make themselves like their princes. It was as shameful to appear with two eyes and to walk erect in the train of a blind and crippled king as it would be now if one dared to present himself at court in ruffles and a cap, or with white leggings and golden spurs. This fashion of the Ethiopians was extremely bizarre and disagreeable, but nonetheless it was the fashion. They followed it with joy, and did not think as much about the pain that the fashion made it necessary to suffer as about the honor they brought on themselves by appearing to be full of generosity and affection for their king. In short, this extravagant fashion, being supported by a false explanation of friendship, passed into the custom and law that has long been observed.

The stories of travelers in the Levant teach us that this custom, as well as others contrary to common sense and reason, is observed in many countries. But it is not necessary to cross two borders to see unreasonable laws and customs religiously observed, or to find men who follow disagreeable and bizarre fashions; one need not leave France for that. Wherever there are men susceptible to the passions, and wherever the imagination is mistress of reason, there we shall find the bizarre, indeed, the incomprehensibly bizarre. If one suffers less pain from baring one's breast during the rude chill of winter, and from lacing up the body during the excessive heat of summer, than from plucking out an eye or cutting off an arm, one should suffer more shame. The pain is not so great, but the reason for enduring it is less clear, so they are at least equally bizarre. An Ethiopian can say it is because of generosity that he plucks out an eye, but what can a Christian lady say who exposes what natural prudence and religion oblige her to conceal? That it is the fashion, and nothing more. But this fashion is bizarre, disagreeable, unseemly, and unworthy in every way. It has no other source than a manifest corruption of the heart; one cannot follow it without scandal and without overtly taking the side of the imagination's disorders against reason, of impurity against purity, of the mind of the world against the mind of God—in a word, to follow this fashion is to violate the cause of reason and the Gospel. But that does not matter; it is the fashion, i.e., a law more holy and more inviolable than that God wrote with His hand on the tablet of Moses, and engraved with His spirit in the heart of Christians.

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[a] Diodorus of Sicily *Bibl. hist.* 1. 3 [7].

In truth, I do not know whether the French are completely right to mock the Ethiopians and the savages. It is true that upon first seeing a blind and crippled king with only blind and crippled people in his train, one would have trouble preventing oneself from laughing. But in time one would no longer laugh, one might have more admiration for the magnitude of their courage and friendship and not ridicule the weakness of their mind. It is not the same with fashions in France. Their extravagance is not supported by any apparent reason, and if they have the advantage of not being as distressing, they do not always have the advantage of being as reasonable. In brief, they bear the character of an age still more corrupted, in which nothing is strong enough to control the disorder of the imagination.

What I have just said of courtiers should also be understood of most servants with regard to their masters, maids with regard to their mistresses, and (in order to avoid useless enumeration) all inferiors with regard to their superiors. But especially of children with regard to their parents; because children are in a unique relationship of dependence with regard to their parents, their parents have a love and tenderness for them not encountered in the others, and finally because reason inclines children to submission and respect, which it does not always control.

In order to act on the imagination of others, it is not absolutely necessary that we have authority over them, or that they be in some way dependent upon us. Often force of imagination alone is sufficient for this. It sometimes happens that unknown people, who have no reputation, and for whom we were not biased by any esteem, have such strength of imagination and as a result such vivid and affective expressions that they persuade us without our knowing either why or even precisely of what we are persuaded. It is true that this seems quite extraordinary, but nonetheless there is nothing more common.

Now, this imaginary persuasion can come only from the force of a visionary mind that speaks vividly without understanding what it says, thereby causing the minds of those who hear what it says to believe strongly without understanding what they believe. For most men allow themselves to be led by the force of sensible impression, which distracts and confuses them and impels them to judge what they conceive only confusedly through passion. I beg those who read this work to think about this, to notice examples of it in conversation in which they find themselves, and to reflect upon what takes place in their own minds on these occasions. This will be much more useful to them than they can possibly imagine.

It must be carefully noted that there are two things that marvelously contribute to the force of the imagination of others on us. The first is an air of piety and gravity, the other is one of skepticism and pride. For according to our disposition toward piety or skepticism, persons who speak with a grave and pious air, or with a proud and skeptical air, affect us quite differently.

It is true that the one is much more dangerous than the other, but we must never let ourselves be persuaded by the manners of either, but only by the force of their reasons. One can utter stupidities in a grave and modest way, and impieties and blasphemy in a devout manner. Therefore, we should examine, in accordance with the advice of Saint John,[a] whether the minds are of God, and not place our trust in all kinds of minds. Demons are sometimes transformed into angels of light, and one finds people to whom the air of piety is almost natural, whose reputation therefore is usually well established, who dispense men from their essential obligations, even from that of loving God and their neighbor, in order to enslave them to some Pharisaical ceremony or practice.

But the strong imaginations whose impression and contagion we must most carefully avoid are those of certain minds of the world who put on the air of freethinkers, which is not difficult for them to acquire. For all we need do at present is to deny original sin and the immortality of the soul, or to ridicule some accepted opinion in the church, and to do so with a certain air, in order to acquire among ordinary men the rare quality of being a freethinker.

These petty minds usually have a great deal of fire, and a certain free and proud air that dominates and disposes weak imaginations so that they become susceptible to lively and specious words, which signify nothing to attentive minds. They are completely at home in expression, but very ill at ease with argument. But because men, however reasonable they may be, much prefer to be affected by the sensible pleasure of manner and expression than to be fatigued in the examination of arguments, it is clear that these minds must triumph over others, and hence communicate their errors and their malignity through their power over the imagination of other men.

[a] Epistle, chap. 4. [vv. 1-3].

BOOK TWO: PART THREE

Chapter Three

I, The strength of imagination of certain authors. II. Tertullian.

<I. The strength of imagination of certain authors.>

One of the greatest and most remarkable proofs of the power that some imaginations have over others is the power some authors have of persuading without arguments. For example, the turn that Tertullian, Seneca, Montaigne, and certain others give to their words has so much charm and flair that it dazzles the minds of most people, though their speech is but a weak picture, a shadow, as it were, of the imaginations of these authors. Their words, dead though they be, have more vigor than the arguments of certain other people. They enter, they penetrate, they dominate the soul in a manner so imperious that they are obeyed without being understood, and we yield to their orders without knowing them. We wish to believe, but know not what to believe; for when we wish to know precisely what we believe or want to believe, when we approach, so to speak, these phantoms in order to scrutinize them, they often vanish in smoke with all their display and luster.

Although the books of the authors I have just named are excellent for learning about the power some imaginations have over others, and although I propose them as examples of this, I nevertheless do not intend to condemn them in all respects. I cannot prevent myself from respecting certain beauties to be found there, and deferring to the universal approbation they have had for centuries.[a] I declare, finally, that I have a great deal of respect for some works of Tertullian, especially his apology against the gentiles and his book of prescriptions against the heretics, as well as for some portions of Seneca's books, although I do not have very much esteem for Montaigne's book.

II. Tertullian.

Tertullian was in truth a man of profound erudition, but he had more memory than judgment, more penetration and scope of imagination than penetration and scope of mind. Finally one cannot doubt that he was a visionary in the sense I have hitherto explained, and that he had nearly all the qualities I have attributed to visionary minds. His respect for the visions of Montanus and his prophetesses is an incontestable proof of his bad judgment. This zeal, these ecstasies, these enthusiasms over unimportant subjects perceptibly mark the disorder of his imagination. Such irregular movements in his hyperboles and in his figures! Such pompous and magnificent arguments, which prove only by their perceptible luster and persuade only by dizzying and fascinating the mind.

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[a] See the *Elucidations* [9].

Why, for example, does this author, who wishes to justify having assumed the mantle of a philosopher, say that this mantle had formerly been fashionable in the city of Carthage? Is it now permitted to take up cap and leggings because our fathers used them? And can women wear hoods and farthingales, except at carnival time, when they wish to disguise themselves?

What can he conclude from these pompous and magnificent descriptions of changes that occur in the world? And what can they contribute to his justification? The moon is different in its phases, the year in its seasons, the countryside changes its face from winter to summer. Floods occur that drown entire provinces, and earthquakes that swallow them up. New cities are built, new colonies established, we have seen inundations of peoples who have ravished entire countries; in short, all of nature is subject to change. Therefore, he had reason to doff the robe in order to take up the mantle! What relation is there between what he must prove on the one hand and all these changes and many more on the other, which he researches with great care, describing them with forced, obscure, and strained expression? The peacock[a] changes its colors with each step it takes, the serpent entering a narrow hole leaves its very skin and is renewed; therefore, he is right to change his dress? Can anyone in cold blood and in possession of his senses draw such conclusions? And could anyone see them drawn without laughing, unless this author had dizzied and confused the minds of those who read him?

Nearly all the rest of this little book *De pallio* is full of arguments as far removed from his subject as these, which certainly prove only by dazzling those capable of being dazzled. But it would be useless to spend more time on it. It is sufficient to say here that if precision of mind, as well as clarity and distinctness in discourse, should always appear in everything one writes (since one ought to write only to make known the truth), then it is impossible to excuse this author, who, even according to Salmasius,[b] the greatest critic of our times, has exerted all his efforts toward making himself obscure, and who has succeeded so well in his plan that this commentator was led to swear that no one ever understood him perfectly. But even if the genius of the nation, the whim of the fashion which reigned at that time, and finally the nature of satire or humor were capable of justifying to some degree this remarkable plan of making himself obscure and incomprehensible, it would not excuse the worthless arguments and ramblings of an author who, in many other works besides those considered here, says anything that comes into his mind, provided it be some extraordinary thought and that he have some bold expression through which he might hope to parade the strength, or better the derangement, of his imagination.

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[a] Ch. 2 and 3, *De pallio*.

[b] "Multos etiam vidi postquam bene aestuassent ut eum assequerentur, nihil praeter sudorem & inanem animi fatigationem lucratos, ab ejus lectione discessisse. Sic qui Scotinus haberi viderique dignus, qui hoc cognomentum haberet, voluit, adeo quod voluit a semetipso impetravit, & efficere id quod optabat valuit, ut liquido jurare ausim neminem ad hoc tempus extitisse, qui possit jurare hunc libellum a capite ad calcum usque totum a se non minus bene intellectum quam lectum." Salm. in epist. ded. *Comm. in Tert.*

BOOK TWO: PART THREE
Chapter Four

The imagination of Seneca.

Seneca's imagination is sometimes no better controlled than Tertullian's. His impetuous impulses often carry him into unknown territory where he nevertheless walks with the same assurance as if he knew where he was and where he was going. As long as he makes great strides, designed strides, in a precise cadence, he imagines he has made great progress, but in truth he is like a dancer who always ends up where he begins.

It is necessary to distinguish the power and beauty of words from the power and evidence of arguments. There is doubtless great power and some beauty in the words of Seneca, but there is very little power or evidence in his arguments. He gives a certain turn to his words through the force of his imagination that affects, agitates, and persuades through impression, but he does not give them that clarity and pure light that illuminates and persuades through evidence. He convinces because he arouses the emotions and because he pleases, but I do not believe he can persuade those who can read him calmly, who are prepared against surprise, and who are accustomed to yield only to the clarity and evidence of arguments. In a word, although he speaks and speaks well, he is careless about what he says—as if one could speak well without knowing what one says—and hence he often persuades without our knowing either what we are persuaded of or how we are persuaded—as if one should ever permit oneself to be persuaded of something without conceiving it distinctly, and examining the proofs that demonstrate it.

What is more magnificent and pompous than the idea he gives us of his wise man? But at bottom what is more vain and imaginary? The portrait he draws of Cato is too noble to be natural; it is but varnish and plaster, meaning nothing except in the view of those who neither study nor know anything of nature. Cato was a man subject to the misery of men, he was not at all invulnerable—this is but a myth; those who struck him, hurt him. He had neither the hardness of a diamond unbreakable by iron nor the solidity of rocks immovable by floods, as Seneca pretends. In a word, he was not insensible, and the same Seneca finds himself obliged to agree with this when his imagination has cooled a little and he reflects more on what he says.

> Itaque non refert, quam multa in illum tela conjiciantur, cum sit nulli penetrabilis. Quomodo quorumdam lapidum inexpugnabilis ferro duritia est, nec secari adamas, aut caedi vel teri poltest, sed in currentia ultro retundit: quemadmodum projecti in altum scopuli mare frangunt, nec ipsi ulla saevitiae vestigia tot verberati saeculis ostentant. It sapientis animus solidus est, & id roboris collegit, ut tam tutis sit ab injuria quam illa quae extulli.
>
> Sen. ch. 5. tract. Quod in sapientem non cadit injuria.

But why then will he not grant that his wise man can become miserable, since he agrees that he is not insensible to pain? By no means, pain does not affect his wise man; the fear of pain does not upset him. His wise man is above the fortune and malice of men; they are incapable of disturbing him.

There are no walls and no towers in the strongest places that battering rams and other engines of war cannot shake and eventually topple. But there are no machines sufficiently powerful to disturb the mind of his wise man. Do not compare him to the walls of Babylon breached by Alexander, nor to those of Carthage and Numantia, breached by a single army, nor finally to the capitol and the citadel that even today bear signs that enemies once overcame them. Arrows shot at the sun cannot reach it. The sacrileges committed in overthrowing temples and breaking their images do not disturb divinity. The gods themselves can be buried beneath the ruins of their temples, but his wise man will not be buried by them; or if he is, he cannot be hurt by them.

> Adsum hoc vobis probaturus: sub isto tot civitatum eversore munimenta incursu arietis labefieri, & turrium altitudinem cuniculis ac latentibus fossis repente residere, & aequaturum editissimas arces aggerem crescere. At nulla machinamenta posse reperiri, quae bene fundatum animum agitent. And further below: Non Babylonis Muros illi contuleris, quod Alexander intravit; non Cartaginis, aut Numantiae moenia una manu capta; non Capitolium arcemve: Habent ista hostile vertigium. Ch. 6. p. [547].

> Quid tu putas cum stolidus ille Rex multitudine telorum diem obscurasset, ullam sagittam in solem incidisse. Ut celestia humanas manus effugiunt, & ab his qui templa diruunt, aut simulachra conflant, nihil divinitati nocetur, ita quidquid fit in sapientem, proterve, petulanter, superbe, frustra tentatur. Ch. 4. p. [545]

> Inter fragorem templorum super Deos suos cadentium uni homini pax fuit. Ch. 5. p. [546]

But do not believe, says Seneca, that this wise man I depict for you cannot be found. This is not some fiction for foolishly exalting the mind of man. This is no grand idea without reality or truth; Cato may even surpass this idea.

''Non est ut dicas ita ut soles, hunc sapientem nostrum nusquam inveniri. Non fingimus istud humani ingenii vanum decus, nec ingentem imaginem rei falsae concipimus: sed qualem conformamus, exhibuimus, & exhibebimus. Caeterum hic ipse M. Cato vereor ne supra nostrum exemplar sit.'' Ch. 7 [p. 547].

But it seems to me, he continues, that I perceive your mind is agitated and heated. Perhaps you wish to say that to promise things no one can either believe or hope for is to make oneself contemptible, and that the Stoics only change the name of things in order to utter the same truths in a more grand and magnificent manner. But you are wrong; I do not pretend to extol the wise man through these magnificent and brilliant words; I maintain only that he is in an inaccessible place where he cannot be hurt.

''Videor mihi intueri animum tuum incensum, & effervescentem: paras acclamare. Haec sunt, quae auctoritatem praeceptis vestris detrahant. Magna promittitis, & quae ne optari quidem, nedum credi possunt.'' And later on: ''Ita sublato alte supercilio in eadem, quae caeteri, descenditis mutatis rerum nominimus; tale itaque aliquid & in hoc esse suspicor, quod prima specie pulchrum atque magnificum est, nec injuriam, nec contumeliam accepturum esse sapientem.'' And further: ''Ego vero sapientem non imaginario honore verborum exornare constitui, sed eo loco ponere, quo nulla perveniat injuria'' [ch. 3, p. 543].

This is the extent to which Seneca's feeble reason is carried away by his vigorous imagination. But can he cause men who continually feel their miseries and weaknesses to fall under the spell of such proud and vain opinions? Can a reasonable man ever be persuaded that his pain does not affect and hurt him? And as wise and as strong as he was, could Cato suffer without some uneasiness or at least some distraction—I do not say the atrocious injuries of an enraged people who dragged him, stripped him, and beat him—but even the strings of a simple fly? What is more feeble against the strong and convincing proofs of our own experience than this pretty argument of Seneca's, which is nonetheless one of his principal proofs?

What injures, he says, must be stronger than he who is injured. Vice is not stronger than virtue, therefore the wise man cannot be injured by it. For we need only reply either that all men are sinners, and therefore deserving of the misery they suffer, as religion teaches us, or that if vice is not stronger than virtue, vicious men can sometimes have more power than good people, as experience shows us.

''Validius debet esse quod laedit, eo quod laeditur. Non est autem fortior requitia virtute. Non potest ergo laedi sapiens. Injuria, in bonos non tentatur nisi a malis, bonis inter se pax est. Quod si laedi nisi infirmior non potest, malus autem bono infirmior est, nec injuria bonis nisi a dispari verenda est, injuria in sapientem virum non cadit.'' Ch. 7 [p. 548].

Epicurus[a] was right in saying that *offenses were bearable by a wise man*. But Seneca is wrong to say that *wise men cannot even be offended*. The virtue of the Stoics could not render them invulnerable, since true virtue does not prevent one from being miserable and worthy of compassion when one suffers some evil. Saint Paul and the first Christians had more virtue than Cato and the Stoics. They nevertheless admit that they were wretched because of the pain they endured, although they were made happy by the hope of eternal reward. ''Si tantum in hac vita sperantes sumus, miserabiliores sumus omnibus hominibus,'' says Saint Paul.

[a] Epicurus ait injurias tolerabilit esse sapienti, nos injurias non esse.'' Ch. 15 [p. 555].

As only God can give us a true and solid virtue through His grace, only He can cause us to enjoy a solid and genuine happiness; but He neither promises nor gives it in this life. It is in the other that we must hope for His justice as the reward for the miseries we suffered for love of Him. We do not now possess this peace and repose that nothing can disturb. Even the grace of Jesus Christ does not give us an invincible strength. It normally leaves us to sense our own weakness in order to make us understand that there is nothing in the world that cannot wound us, and to make us endure all the insults we receive with a humble and modest patience rather than with a proud, conceited patience like the constancy of the lofty Cato.

When Cato was struck in the face, he was not angered;[a] he did not avenge himself, neither did he pardon the offense, but he proudly denied that anyone had done him injury. He wanted everyone to consider him infinitely above those who had struck him. His patience was only blindness and pride. It was shocking and insulting to those who had mistreated him, and Cato signified, by this Stoical patience, that he regarded his enemies as beasts against whom it was shameful to be angry. It is this contempt for his enemies and great esteem for himself that Seneca calls the greatness of courage. ''Majori animo,'' says he, speaking of the injury that had been done to Cato, ''non agnovit quam ignovisset.'' How extravagant it is to confuse the greatness of courage with pride, and to separate patience from humility to join it with insufferable pride. But how agreeably these excesses flatter the vanity of man, who never wishes to lower himself, and how dangerous it is, especially to Christians, to instruct themselves in morality from an author so injudicious as Seneca, whose imagination is so strong, so lively, and so imperious that it dazzles, distracts, and carries away those with but little firmness of mind and much sensibility for all that flatters the concupiscence of pride.

Rather, let Christians learn from their Master that the impious are capable of hurting them, and that good men are sometimes subjected to these impious ones by the order of Providence. When one of the officers of the High Priest struck Jesus Christ, this wise man of the Christians, infinitely wise, and even as powerful as He is wise, confessed that this servant was capable of wounding Him. He is not angered, He is not vengeful like Cato, He pardons, as having been truly wronged. He could have been vengeful and destroyed His enemies, but He suffered with a humble and modest patience injurious to no one, not even to this servant who had wronged him. Cato, on the contrary, unable or not daring to exact a real vengeance against the wrong he had received, tries to exact an imaginary one, which flatters his vanity and conceit. In spirit he exalts himself to the clouds; from there he sees men here below as small as flies, and holds them in contempt as though they were insects incapable of having offended him and deserved his anger. This vision is a thought worthy of the wise Cato. This gives him the greatness of soul and this firmness of courage that make him like the gods. This makes him invulnerable, because it is this vision that places him above all the influence, power, and malignity of other men. Poor Cato! You imagine your virtue raises you above all things; your wisdom is but folly and your grandeur but an abomination before God, whatever the wise men of the world think of them.[a]

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[a] Seneca, ch. 14 of the same book. [p. 554].

There are many kinds of visionaries: some imagine themselves transformed into cocks and hens, others believe they have become kings or emperors, still others are persuaded they are independent and like the gods. But if men always regard those who are sure they have become cocks and hens as fools, they do not always think those who say that their virtue renders them independent and equal to God are truly visionaries. The reason for this is that to be judged a fool it is not sufficient to have foolish thoughts. Beside this, other men must take the thoughts you have as visionary and foolish. For fools do not pass for what they are among fools like themselves but only among reasonable men, just as wise men do not pass for what they are among fools. Therefore, men recognize as fools those who imagine they have become cocks or kings, because everyone has reason for not believing that one can so easily become a cock or a king. But there is nothing new about men believing they can become gods, they have always believed it and perhaps more than they do now. Vanity has always made this thought rather probable to them. They get it from their first parents, who doubtless shared this view when they obeyed the demon, who tempted them with the promise that they would become like God; "Eritis sicut Dii." [Gen. 3:5.] Even the purest and most enlightened intelligences were so completely blinded by their own pride that they desired and perhaps believed themselves capable of becoming independent, and they even planned to assume the throne of God. Consequently, we need not be surprised if men who have neither the purity nor the light of the angels abandon themselves to the impulses of their vanity, which blind and seduce them.

If the temptation to grandeur and independence is the strongest of all, this is because it appears to us, as to our first parents, to conform to our reason as well as our inclination, because we are not always aware of all our dependence. If the serpent had threatened our first parents by saying to them, if you eat of the fruit that God has forbidden you to eat, you will be transformed, you into a cock and you into a hen, I have no fear in assuring you that they would have laughed at a temptation so crude, for we would laugh at it ourselves. But the demon, judging others by himself, well knew that the desire for independence was the weakness through which they had to be taken. Moreover, as God has created us in His image and likeness and as our happiness consists in being like God, one can say that the magnificent and enticing promise of the demon is the same as what religion proposes to us, and that it will be accomplished in us, not, as the lying and arrogant tempter says, by disobeying God but by following His commands exactly.[b]

[a] "Sapientia hujus mundi stultitia est apud Deum" [Paul, 1 Cor. 3:19].

"Quod hominibus altum est, abominatio ante Deum." Luke 16 [16:15].

[b] Ep. of St. John, ch. 3 [2].

The second reason that makes us regard those who believe they have become cocks or kings as fools when we do not think the same of those who assure us that no one can hurt them because they are above pain, is that hypocondriacs are obviously mistaken, and we need only open our eyes to have sensible proofs of their error. But when Cato asserts that those who struck him did not hurt him at all, and that he is above all injuries that anyone could cause him, he asserts it, or may assert it, with such pride and gravity that we cannot tell if inside he really is as he appears to be. One is even led to believe that his soul is not shaken since his body remains immobile, because the outward appearance of our body is a natural sign of what takes place in the innermost recesses of our soul. Hence, when a bold liar lies with great assurance, he often causes the most unbelievable things to be believed, for the assurance with which he speaks is a proof that affects the senses, and consequently is exceedingly strong and quite persuasive to most men. Thus, few people regard the Stoics as visionaries or bold liars, for we have no sensible proof of what happens in the depths of their hearts, and because their facial expression is a sensible proof that easily convinces. Besides, their vanity inclines them to believe that man's mind is capable of that greatness and independence of which he boasts.

All this shows that few errors are more dangerous, or more easily communicable, than those with which Seneca's books are filled. For these errors are refined, suited to man's nature, and similar to that in which the demon engaged our first parents. They are clad in these books with pompous and splendid ornaments, which gain entry for them into most minds. They enter, grasp, stun, and blind them. But they blind them with a proud blindness, a dazzling blindness, a blindness accompanied by glimmering lights, not a humiliating blindness full of shadows that make one aware that one is blind and force one to admit it to others. When one is struck by this proud blindness, one places oneself among the noble and powerful minds. Even others include us in this class and admire us. Thus, nothing is more contagious than this blindness, because the vanity and sensibility of men, the corruption of their senses and passions, dispose them to search after it, to be struck by it, and excite them to impress others with it.

I do not believe then that one can find an author more appropriate than Seneca for exemplifying the nature of this contagion of an infinity of men whom we call noble and powerful minds, and for showing how strong and vigorous imaginations dominate weak and unenlightened minds—not by the strength or evidence of arguments, which are products of the mind—but by the turn and vivid manner of expression, which depend on strength of imagination.

I am well aware that this author is greatly admired by many, and that my characterization of him as a very fanciful and injudicious man will be taken by many as a sort of temerity. But it is principally because of this esteem that I have undertaken to speak of him here, not because of any kind of envy or humor but because the esteem one has for him will more deeply affect the mind of the reader and cause it to pay greater attention to the error I have attacked. For it is essential as far as possible to use illustrious examples of what one says when they are important, and sometimes to criticize a book is to bring honor to it. But in the end

I am not the only one to find fault with the writings of Seneca, for without speaking of some illustrious critics of this age, nearly 1,600 years ago a very judicious author remarked that there was but little[a] exactitude in his philosophy,[b] little discernment and precision in his elocution,[c] and that his reputation was a result of the fervor and indiscrete inclinations of youth rather than the consent of wise and perspicacious people.

It is useless to combat crude errors by public writings, because they are not contagious. It is ridiculous to warn men that hypochondriacs are deceived, for they know this well enough. But if those they hold in high esteem are mistaken, it is always useful to warn men of it, lest they follow in the errors of those they esteem. Now it is clear that the spirit of Seneca is a spirit of pride and vanity. Therefore, since pride, according to the Scriptures, is the source of sin, "Initium peccati superbia" [Eccles. 10:15], the spirit of Seneca cannot be the spirit of the Gospel, nor can his morality be allied with the morality of Jesus Christ, which alone is sound and true.

It is true that not all the thoughts of Seneca are false and dangerous. This author can be read with profit by those who see things correctly and know the foundation of Christian morality. Great men have used him well, and I do not care to condemn those who, in order to accommodate themselves to the weakness of other men who have too much esteem for him, have drawn from the works of this author to defend the morality of Jesus Christ, thereby fighting the enemies of the Gospel with their own weapons.

There are good things in the Koran, and one finds genuine prophecies in the annals of Nostradamus; the Koran can be used to combat the religion of the Turks, and the prophecies of Nostradamus can be used to convince certain bizarre and visionary minds. But what is good in the Koran does not make it a good book, and some genuine explanations in the annals of Nostradamus will never allow Nostradamus to pass for a prophet; and those who use these authors cannot be said to approve them, or really to esteem them.

You should not claim to oppose what I have advanced against Seneca by relating many passages from this author containing nothing but sound truths conforming to the Gospel; I agree there are some, but there are also some in the Koran and other evil books. Likewise, you would be wrong to deluge me with the authority of an infinity of people who have used Seneca, for one can sometimes use a book one believes to be absurd, provided those to whom we speak do not have the same opinion of it as we.

To destroy the Stoic wisdom completely, one need know but one thing, which is sufficiently proved through experience and by what has already been said, that we are tied to our body, to our parents, to our friends, to our prince, to our country, by bonds we cannot break, and would even be ashamed to try to break.

[a] "In Philosophia parum diligens."

[b] "Velles eum suo ingenio dixisse alieno judicio."

[c] "Si aliqua contempsisset, & consensu potius eruditorium quam puerorum amore comprobaretur." Quintilian, bk. 10, ch. 1.

Our soul is joined to our body, and through our body to all visible things by a hand so powerful that it is impossible to loosen them by ourselves. It is impossible for our body to be pricked without our being pricked and hurt, because in our present state this correspondence between us and our bodies is absolutely necessary. Likewise, no one can despise us and say injurious things about us without our feeling grieved by it, because God, having made us in order to live in a society with other men, gave us an inclination toward everything capable of binding us to them, which inclination we cannot overcome by ourselves. It is illusory to say that pain does not hurt us, or that words of contempt are incapable of offending us, because we are above all of that. One is never above nature, unless through grace, and a Stoic will never hold the glory and esteem of men in contempt simply through the strength of his mind.

Men can indeed overcome their passions through contrary passions; they can conquer fear or pain through vanity; I mean merely that they can choose not to flee or complain when, feeling themselves under the gaze of the mob, the desire for glory sustains them and stops the movement in their bodies that urges them toward flight. They can conquer their passions in this way, but this is not really to conquer them, this is not really to be delivered from their servitude; it is, perhaps, to exchange masters for a while, or rather it is to extend one's slavery. It is to become wise, happy, and free only in appearance, while in reality suffering a hard and cruel servitude. We can resist our natural union with our body by our union with other men, because we can resist nature through the forces of nature; we can resist God through the forces God gives us. But we cannot resist Him solely through the strength of our mind; we cannot completely conquer nature but through grace, because we can (if I may be permitted to speak in this way) only overcome God with the particular help of God.

Hence, this magnificent division of all things not dependent upon us and upon which we ought not to depend is a division that seems consistent with reason, but that is inconsistent with the disordered state to which sin has reduced us. We are united to all creatures by God's order, and we depend upon them absolutely because of the disorder of sin.

As a result, since we cannot be happy in a state of pain or anxiety, we should not hope to be happy in this life, imagining we are independent of all those things to which we are naturally enslaved. We cannot be happy except through a living faith and a strong hope that enables us to enjoy future goods in advance, and we cannot live according to the rules of virtue, overcoming nature, unless we are sustained by the grace Jesus Christ has merited for us.

BOOK TWO: PART THREE

Chapter Five

Montaigne's book.

The essays of Montaigne can also be used to show the effect of imaginations upon one another, for this author has a certain free air, he gives such a natural and vivid turn to his thoughts, that it is difficult to read him without becoming engrossed in him. The diffidence he affects becomes him well and makes him amiable to most people without making them hold him in contempt. And his pride is the pride of an honest man, if one may so speak, which makes one respect him without hating him. His well-bred and gallant air, supported by some erudition, has such a prodigious effect on the mind that men often admire him, nearly always agreeing with what he decides without daring to examine it, and sometimes even without understanding it. It is not at all his arguments that persuade us; he hardly ever uses any in support of the things he advances, or at least he hardly ever puts forth arguments with any foundation. Indeed, he does not have principles on the basis of which he founds his reasoning, and he has no order for making deductions from his principles. A touch of history is no proof, a short fairy tale does not demonstrate, a couple of verses from Horace, an apothegm from Cleomenes or Caesar should not persuade reasonable men: yet these essays are nothing but a tissue of historical references, short fairy tales, well-turned phrases, couplets, and apothegms.

It is true that one should not regard Montaigne in his essays as a man who is reasoning, but rather as a man who is amusing himself, trying to please without concern for teaching; and if those who read them were merely amused, we would have to agree that Montaigne would not be such mischievous reading for them. But it is nearly impossible not to like what is pleasing and not to be nourished by victuals agreeable to the taste. The mind cannot be pleased by reading an author without adopting his opinions, or at least without receiving some coloring from them which, mixed with its own ideas, makes them confused and obscure.

It is not only dangerous to read Montaigne for diversion, because the pleasure we take in him insensibly engages us in his views, it is also dangerous because this pleasure is more criminal than we might think. For this pleasure surely arises principally from concupiscence, and supports and strengthens only our passions, since the author's style is agreeable only because it affects us and imperceptibly arouses our passions.

It would be useless to prove this in detail, and to demonstrate generally that all the various styles ordinarily please us only because of the secret corruption of our heart; but here is not the place for this, and it would carry us too far afield. Nevertheless, if we wish to reflect upon the connection of the ideas and passions of which I have spoken before,[a] and upon what happens in ourselves when we are reading some well-written piece, we shall be able to recognize to some extent that if we like the sublime style, the noble and free air of certain authors, it is because we are vain, loving grandeur and independence. We would also find that this relish we take in the delicacies of effeminate discourse has no other source than a secret inclination for softness and voluptuousness. In a word, it is a certain attraction to what affects the senses, not an awareness of the truth, that causes us to be charmed by certain authors and to be carried away by them almost in spite of ourselves. But to return to Montaigne.

It seems to me that his greatest admirers praise him because of a certain judiciousness of character, removed from pedantry, as in one who has perfectly understood the nature and weaknesses of the human mind. If therefore I show that Montaigne, gentleman though he is, was as pedantic as many others, and that he had but a very mediocre understanding of the human mind, I shall have shown that those who admire him most were not persuaded by clear reasons, but won over by the force of his imagination.

This term *pedant* is very equivocal, but common usage, it seems to me, and even reason would have it that we call those people pedants who, in order to parade their false science, quote all sorts of authors, whether right or wrong, who speak simply in order to be heard, and to be admired by fools who, without judgment or discernment, amass apothegms and historical references to prove, or seem to prove, things that can only be proved by arguments.

<The word> *pedant* is opposed to <the word> *reasonable*, and what makes pedants odious to people of intelligence is that they are not reasonable; for, because people of intelligence naturally like to reason, they cannot suffer the conversation of those who do not reason. Pedants cannot reason because they have narrow minds, or else their minds are filled with false learning; and they do not wish to reason, because they see that certain people respect and admire them more when they quote some unknown author and some sentence from one of the ancients than when they pretend to reason. Therefore, since their vanity is satisfied by the prospect of the respect brought to them, they apply themselves to the study of all those extraordinary sciences that attract the admiration of ordinary men.

Pedants are therefore vain and proud, of large memory and small judgment, happy and strong with citations, unhappy and weak in reason, with a vigorous and extensive but uncertain and disorderly imagination, unable to express itself with precision.

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[a] Last chapter of the first part of this book.

It will not be very difficult now to prove that Montaigne was as much a pedant as were many others, according to this concept of the word, which seems to be the one most in accord with reason and common use, for I do not speak here of the pedant in the long robe—a long robe cannot make a pedant. Montaigne, so averse to pedantry, may never have worn a long robe, but he could not in this way divest himself of his own faults. He worked hard to give himself the air of a gentleman, but he did not work to give himself a precise mind, or at least he did not succeed in doing so. And so he became a gentlemanly pedant of quite singular species, rather than a reasonable, judicious, and honest man.

Montaigne's book contains such obvious proofs of the vanity and pride of its author that it might seem useless to note them here, for one must be quite conceited in order to imagine, as he does, that people would wish to read such a thick book to have some acquaintance with our humors. He must necessarily set himself apart from the common man and regard himself as a quite extraordinary person.

All creatures have an essential obligation to turn the minds of those who wish to adore them toward that one which alone merits adoration. And religion teaches us that we should never permit the mind and heart of man, made only for God, to be occupied with the admiration and love of ourselves. When Saint John prostrated himself before the angel of the Lord, this angel prohibited him from worshiping him; "I am a servant," he said to him, "as are you and your brothers; adore God."[a] Only devils, and participants in the rites of devils, are pleased by being worshiped, and to wish that other men be preoccupied with us is to wish to be worshiped not from an exterior and visible adoration but from an interior and true one; it is to wish to be adored as God wishes to be adored, i.e., in spirit and in truth.

Montaigne wrote his book only to picture and represent his own humors and inclinations. He admits this himself in the foreword to the reader, included in all the editions: "It is myself whom I portray," he says. "I myself am the subject of my book."[1:4]<See translators' note below.> This is clear enough to those who read it; for there are few chapters in which he does not digress to speak of himself, and there are entire chapters in which he speaks of nothing else. But if he composed his book to portray himself in it, he had it printed to be read. Thus, he wanted men to consider and be occupied by his person, although he says, "it is not right for one to use his leisure upon such a frivolous and vain subject." These words only condemn him, for if he believed it was wrong for us to use our time to read his book, he himself acted contrary to common sense in having it printed. And so we are obliged to believe either that he did not say what he thought, or that he did not do what he should.

It is again but a pleasant excuse for his conceit to say that he only wrote for his *friends* and *relatives*; for if this had been so, why did he produce three printings of the book? A single one did not suffice for his relatives and friends? Why again

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[a] Apoc. 19,10 "Conservus tuus sum," etc. "Deum adora."

<Rodis-Lewis used the edition of P. Villey, Paris, 1930–31, 3 vols.>

did he add to his book in the last printing, and why did he never remove anything from it, if not because fortune favored his intensions? "I add," he says,[a] "but I do not correct, because it seems to me that he who offers his work to the world no longer has the right to do so. Let him do better in another work if he can, and not corrupt the works he has sold. From such people it is not necessary to buy anything until they are dead: Let them think well before producing anything. Why the haste? My book is always the same," etc. [3:359] He therefore wanted to produce and offer his book to the world as well as to his relatives and friends. But his vanity would have been criminal enough had he only turned and arrested the minds and hearts of his relatives and friends toward his portrait for as long as it takes to read his book.

If it is a defect to speak of oneself often, it is an affront, or rather a kind of stupidity, to praise oneself all the time as Montaigne does, for this is not only a sin against Christian humility but also an insult to reason.

Men are made to live together, to form civil bodies and societies. But it must be remarked that not all the individuals composing these societies wish themselves to be regarded as the least part of the body to which they belong. Hence those who, by praising themselves and placing themselves above others, show that they regard them as the least parts of their society, and consider themselves the principal and most honorable parts, necessarily render themselves odious to everyone rather than causing themselves to be loved and esteemed.

It is therefore vain, indeed tactlessly and ridiculously vain, for Montaigne to speak favorably of himself all the time; but it is still more extravagantly vain for this author to describe his faults, for if one looks at them seriously, one will see that he reveals only those faults glorified in the world because of the corruption of the age, that he freely attributes to himself those faults that might enable him to pass as a sound mind or that give him the air of a gentleman, and that his intention in this fraudulently honest confession of his disorders is to make us believe him more willingly when he speaks to his advantage. He is right in saying[b] that "both prizing and despising oneself are often born of the same arrogant attitude."

It is always a sure sign that one is full of oneself; and Montaigne seems to me even more proud and vain when he censures than when he praises himself, because it is an unbearable conceit to take pride in his defects instead of being humiliated by them. I would prefer a man who hides his crimes with shame than one who makes them public with effrontery, and in my opinion we should look with horror upon the cavalier and unchristian way in which Montaigne represents his defects. But let us examine the other qualities of his mind.

If we take Montaigne at his word, we shall be persuaded that he was a man *of no retention*;[c] *that he had no storehouse*;[d] *that he had no memory at all*; but that he was not lacking in sense and judgment. Nevertheless, if we believe the portrait

[a] Ch. 9. bk. 3.

[b] Bk. 3, ch. 13 [3:571].

[c] Bk. 2, ch. 10 [2:152].

[d] Bk. 1, ch. 24 [2:635].

that he has drawn of his own mind, i.e., his own book, we shall not completely share his views. ''I would not know how to take an order without notebooks,'' he says, ''and when I have to give a speech, if it is lengthy I am reduced to the vile and miserable necessity of learning what I am to say by heart, word for word; otherwise I would have neither presence nor assurance, being fearful that my memory would do me an evil turn.'' [2:635.] Does a man who can learn a long-winded discourse word for word to have some presence and assurance lack memory rather than judgment? And can one believe Montaigne when he says of himself: ''It is necessary for me to call people who serve me by the name of their functions or their countries. For it is very difficult for me to retain names, and if I should live a long time I believe I shall forget my own name.'' [2:638.] Has a simple gentleman, who can remember long-winded discourses by heart, and word for word, with assurance, such a great number of servants that he cannot remember their names? ''A man who was born and suckled in the fields,[a] among the furrows, a man of affairs with a household,'' who says ''that to give no importance to what is at our feet, to what we have in our hands, to what most concerns practical life, is something far removed from his principles'' [Ibid.] Can he forget the French names of his domestics? Can he not know, as he says, ''most of our coins, the difference between one grain and another in the earth and the granary, unless it is quite obvious, the most obvious principles of agriculture, which even children know, such as the use of yeast in making bread, and why it is that to make wine it must be put in vats,'' [ibid.] and at the same time have a mind full of the names of the ancient philosophers and their principles, ''of the ideas of Plato,[b] the atoms of Epicurus, of the plenum and vacuum of Leucippus and of Democritus, Thales' water, Anaximander on the infinity of nature, Diogenes' air, the numbers and symmetry of Pythagoras, Parmenides' infinity, the one of Museus, the fire and water of Apollodorus, the like particles of Anaxagoras, the discord and love of Empedocles, Heraclitus' fire, etc.?'' A man who, in three of four pages of his book, relates more than fifty names of different authors together with their opinions, who has filled all his work with historical references and entangled apothegms without order, who says that history and poetry[c] are his meat in the matter of books, who constantly contradicts himself, even in the same chapter, and even when speaking of things he pretends to know best, when he speaks of the qualities of his own mind, should this man brag about having more judgment than memory?

We affirm then that Montaigne was ''excellent in forgetfulness'' [2:639], since Montaigne assures us of it, and wishes that we have this opinion of him, and finally because it is not completely contrary to the truth. But let us not be persuaded by his word, or by the compliments he gives himself, that this was a man of great sense and quite extraordinary penetration of mind. This would be to plunge ourselves into error, and to give too much credit to the false and danger-

[a] Bk. 2, ch. 17 [2:641].

[b] Bk. 2, ch. 12 [2:412].

[c] Bk. 1, ch. 25 [1:277].

ous opinions he details with an arrogant and domineering confidence, which only blinds and confuses feeble minds.

The other compliment given to Montaigne is that he has a perfect knowledge of the human spirit, that he penetrates its depths, its nature, and its properties, that he knows the strong and the weak of it, in a word, everything that can be known about it. Let us see if he really deserves these compliments, and how it happens that people are so liberal in praising him.

Those who have read Montaigne well know that this author affects the air of a Pyrrhonist,[a] and takes pride in doubting everything. ''The persuasion of certainty,'' he says, ''is a sure sign of folly and extreme uncertainty; and there is no more foolish sort of man, nor less philosophical, than the philodoxes of Plato.'' On the contrary, in the same chapter[b] he so praises the Pyrrhonists that he must have been a member of this sect. To pass for an intelligent gentleman it was necessary in his time to doubt everything. And the quality of intellectual strength to which he aspired confirmed him still further in these opinions. Thus, by supposing him to be an Academic one could immediately recognize him as the most ignorant of all men, not only in what concerns the nature of the mind, but in all other things as well. For since there is an essential difference between knowing and doubting, if the Academics say what they believe when they assure us that they know nothing, we can say they are the most ignorant of all men.

Not only are they the most ignorant of all men, they are also the defenders of the least reasonable opinions. For not only do they reject everything that is most certain and most universally received, to pass themselves off as independent minds, by the same twist of the imagination they are pleased to speak decisively about the most uncertain and least probable matters. Montaigne is visibly afflicted with this illness of the mind; and it must necessarily be said that not only was he ignorant of the nature of the human mind but even that he was in grievous error about the subject, assuming he told us what he thought of it, as he should have done.

For what can one say about a man who confuses mind with matter, who relates the most extravagant opinions of philosophers about the nature of the soul [2:417] without holding them in contempt, even giving these opinions in a way that makes it rather obvious that he most approves those opinions most opposed to reason; a man who did not see the necessity of the immortality of our souls; who thought that human reason could not recognize it [2:437] and who regarded the proofs given of it as dreams the desire for it caused to be born in us: ''Somnia non docentis, sed optantis:'' who finds fault with ''men who separate themselves from the throng of other creatures, and distinguish themselves from the beasts,'' whom he calls ''our fellow brethren and our companions'' [2:239], and whom he believes speak, understand one another, and mock us, just as we speak, understand each other, and mock them; who posits a greater difference between one man and another than between man and beast; who attributes even to spiders the ability to ‘‘deliberate, think, and draw conclusions’’ [2:245], and who, after having supported the opinion that man’s soul has no superiority over that of beasts, willingly accepts this opinion: that ‘‘it is not because of reason, discourse, and our souls that we are superior to the beasts, but by our beauty, our fine complexions, and the beautiful disposition of the parts of our bodies, for which we must abandon our intelligence, our prudence, and all the rest, etc?’’ [2:305] Can one say that a man who uses the most bizarre opinions in order to conclude ‘‘that it is not through true discourse, but through our pride and stubbornness that we value ourselves over the other animals’’ [2:306], can one say of this man that he has a very precise knowledge of the human mind, and can one believe that others will be persuaded of this?

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[a] Bk. 1, ch. 12 [bk. 2, vol. 2, pp. 338–46 and 356–49].

[b] Somewhat above [bk. 2, ch. 12, vol. 2, p. 414].

But we must do justice to everyone, and in good faith say what kind of mind Montaigne had. He had but little memory, still less judgment, this is true; but these two qualities together do not constitute what the world usually calls beauty of mind. It is the beauty, vivacity, and breadth of the imagination that seem to be a fine mind. Men generally esteem the brilliant and not the solid mind, because they love what affects the senses more than what instructs reason. Hence, if one takes beauty of imagination for beauty of mind, one can say that Montaigne had a fine, indeed extraordinary, mind. His ideas are false but beautiful; his expressions irregular or bold but agreeable; his discourse is badly reasoned but imaginative. One sees throughout his book an infinitely pleasing originality; completely pedestrian as he is, he is not seen as such; his strong and bold imagination always gives an original turn to the things he copies. In short, he has everything necessary to please and command respect, and I think I have sufficiently demonstrated that it is not by convincing their reason that he makes so many people admire him, but rather because he turns the mind to his own advantage by the all-conquering vivacity of his imagination.

BOOK TWO: PART THREE
Chapter Six

I. People who imagine themselves to be sorcerers and werewolves. II. Conclusion of the first two books.

I. People who imagine themselves to be sorcerers and werewolves.

The most extreme effect of the force of the imagination is the unreasonable fear of the apparition of ghosts, spells, characters, charms, lycanthropes, or werewolves, and generally of everything we imagine to depend upon the power of the devil.

There is nothing more terrible nor anything that frightens the mind more, nor that produces deeper impressions in the brain, than the idea of an invisible power intent upon doing us harm, and to which we can offer no resistance. All conversations that raise this subject are always attended with fear and fascination. Men, attached to everything extraordinary, take bizarre pleasure in recounting these astonishing and prodigious stories about the power and malice of sorcerers to frighten themselves and others. Hence, we should not be surprised that sorcerers are so common in certain countries where the belief in the witches' sabbath is so deeply rooted, where all the most extravagent tales of witchcraft are taken as authentic histories, and where fools and visionaries whose imagination has been deranged at least as much by listening to these tales as by the corruption of their hearts are burned as true witches.

I well know that certain persons will criticize me for attributing most tales of witchcraft to the strength of the imagination, because I understand that men love what frightens them, that they are angered by those who wish to disillusion them, that they are like those hypochondriacs who listen with respect, and faithfully execute the orders of doctors who make dire prognostications for them. Superstitions are not easily destroyed, and one does not attack them without encountering many of their defenders; and this inclination to believe all the dreams of demonographers is blindly produced and upheld by the same cause that makes the superstitious stubborn, as is easy to prove. Nevertheless, this should not prevent me from describing in a few words how I believe that such opinions become established.

A shepherd in his hut after supper tells his wife and children the adventures of the witches' sabbath. As his imagination is moderately heated by the vapors of wine, and as he believes that he has attended several times this imaginary assembly, he is sure to speak in a strong and lively manner. His natural eloquence, joined to the disposition of his family to listen attentively to a subject so novel and terrible, doubtless produces strange impressions in weak imaginations, and it is naturally impossible that his wife and children should not be quite frightened, impressed, and convinced by what he has told them. He is after all a husband, he is a father talking about what he has seen, of what he has done; they love and respect him; why would they not believe him? This shepherd repeats his tale on different days. The imagination of the mother and children gradually receive more profound impressions of it; they become accustomed to it, fears pass, and conviction remains; and finally curiosity brings them to the witches' sabbath. They annoint themselves with the particular drug prescribed in the story; they go to bed. This disposition of their hearts warms their imaginations still more, and the traces the shepherd has formed in their brains open sufficiently for them to judge in their sleep that all the movements of the ceremony whose description has been given to them are present. They wake up, they speak with one another and tell what they have seen. In this way they fortify the traces of their visions in themselves, and the one who has the strongest imagination, being more persuasive than the rest, is sure to take charge of the imaginary history of the witches' sabbath in a few nights time. Here then are the accomplished sorcerers the shepherd has produced, and they themselves will one day make many others if, having strong and vivid imaginations, fear does not prevent them from recounting such stories.

Occasionally, sorcerers of such conviction have been found that they freely admit to everyone that they go to the witches' sabbath, and they are so persuaded of this that although several persons watched them and assured them that they never left their beds, they could not accept their testimony.

Everyone knows that when we tell ghost stories to children, they are almost always frightened and cannot stay alone without lights and company. This is because when their brains do not receive any traces from some present object, those the story has formed there are reopened, often with such force as to represent the ghosts that have been depicted for them as though they were before their eyes. Nonetheless, these stories were not told to them as if they were true. They were not addressed with the same air with which we say something of which we are convinced, and sometimes they are told in a dispassionate and offhand way. We therefore should not be surprised that a man who believes himself actually to have been at the witches' sabbath, and consequently speaks of it in a firm voice with an assured countenance, easily persuades those who respectfully listen to him of the circumstances he describes, and transmits traces similar to those that have deceived him into their imaginations.

When men speak to us, they engrave traces in our brain similar to those they have. When they have deep traces, they speak in a way that causes deep traces in us, for they cannot speak without making us similar to themselves in some way.

Infants in their mothers' womb see only what their mothers see; and even when they have come into the world, they imagine few things of which their parents are not the cause, for even the wisest of men guide themselves by the imagination of others, i.e., by opinion and custom rather than by the rules of reason. And so in places where sorcerers are burned, we find many of them, because in these places it is truly believed that they are burned for what they are, and this belief is strengthened by discussions of them. If they were to cease punishing them and treat them as mad people, in a little while they would no longer be sorcerers, because those who are sorcerers only because of imagination (which certainly constitutes the greatest number of them) would revert to the normal state of men.

It is indubitable that true sorcerers deserve death, and that even those who are sorcerers only through imagination should not be considered completely innocent, because normally they have convinced themselves that they are sorcerers only because they have a disposition to go to the witches' sabbath, and because they have annointed themselves with some drug in order to bring about their evil designs. But by punishing all these criminals indifferently, the common persuasion is strengthened, imaginary sorcerers are multiplied, and thus an infinity of people are lost and damned. Thus, it is with reason that many courts do not punish sorcerers, for fewer of them are found in their jurisdictions, and the envy, the hatred, and the malice of the wicked cannot use this pretext in order to destroy the innocent.

The belief in werewolves, or in men transformed into wolves, is yet another foolish vision. A man, through a deranged effort of his imagination, falls into this madness when he believes he becomes a wolf every night. This disorder of his mind disposes him to perform all the actions of wolves, or those he has heard they do. Thus, he leaves his house at midnight, he stalks the streets, throws himself upon some child he encounters there, bites and mauls him; and stupid and superstitious people imagine that this fanatic has really become a wolf, because the wretch believes it himself and has secretly told some people who are unable to conceal it.

If it were as easy to form the impressions in the brain that persuade men that they have become wolves as it is to go to the witches' sabbath in one's bed without waking up, and if one could roam the streets and commit the ravages these miserable wolfmen do without having one's brain entirely overturned, these beautiful stories of the transformation of men into wolves would be sure to produce their effect just as the tales of the witches' sabbath have, and we would have as many werewolves as we have sorcerers. But the conviction that one has been transformed into a wolf supposes an upsetting of the brain much more difficult to produce than that of a man who merely believes that he goes to the witches' sabbath, i.e., a man who thinks he sees things in the night that are not there and who, upon awakening, cannot distinguish these dreams from the thoughts he has had during the day.

It is fairly common for certain people to have dreams at night vivid enough to be exactly recalled when they awake, even though the subject of their dream is not in itself very terrible. And so it is not difficult for people to persuade themselves that they have been to the witches' sabbath, for it is sufficient for this that their brain preserve the traces caused there during their sleep.

The chief cause that prevents us from taking our dreams for reality is that we cannot connect our dreams with the things we have done while awake, for this is how we recognize that they are only dreams. Now imaginary witches cannot recognize by this means that their witches' sabbath is a dream, for they go to the witches' sabbath only during the night, and what happens at the sabbath cannot be connected to other actions during the daytime. Hence, it is morally impossible to disabuse them in this way. Nor need the things these pretended witches think they have seen at the sabbath have a natural order among them, for they appear to be more real to the degree that their sequence is more extravagant and confused. It is therefore sufficient to deceive them that the ideas of the sabbath rites be vivid and frightening, which they cannot fail to be, if one considers that they represent novel and extraordinary things.

But for a man to imagine himself as a cock, goat, wolf, or bull, such a great disorder of the imagination is required that this is not a common occurrence, although these confusions of the mind do occasionally happen, either through divine punishment, as Sacred Scripture reports in the case of Nebuchadnezzar, or by a natural transport of melacholy to the brain, as in the examples we find in the works of medical authors.

Although I am persuaded that true sorcerers are very rare, that the witches' sabbath is nothing but a dream, and that courts that overturn accusations of witchcraft are the most equitable, nevertheless I do not doubt that there can be sorcerers, charms, spells, and so on, and that the devil sometimes exercises his malice on men with the special permission of a superior power. But Sacred Scripture teaches us that the kingdom of Satan is destroyed, that the angel of heaven has enchained the devil and closed him in the abyss, whence he shall never escape until the end of the world, that Jesus Christ has disarmed this mighty army, and that the time has come when the Prince of the world is driven from the world.

He had reigned until the advent of the Savior, and he reigns still, if you will, in places where the Savior is unknown; but he no longer has any right or power over those who are reborn in Jesus Christ; he cannot even tempt them, unless God permits it; and if God does permit it, it is because they can overcome him. It is therefore honoring the devil too much to tell stories as signs of his power, such as certain new demonographers do, because these stories render the devil formidible to weak minds.

We must despise devils as we despise executioners, for we ought to tremble before God alone. His is the only power that must be feared. We must learn His judgments and His anger, and not irritate Him through contempt for His laws and His Gospel. We should listen with respect when He speaks, or when men speak of Him. But when men speak to us of the power of the devil, it is foolish weakness to be frightened and troubled. Our being troubled only honors our enemy. He wants us to respect and fear him, and his pride is flattered when our minds are prostrated before him.

II. Conclusion of the first two books.

It is time to complete this second book and to take note of the fact, through the things that have been said in this and the preceding book, that all the thoughts the soul has through the body, or through dependence upon the body, are all for the sake of the body; that they are all false or obscure; that they serve only to unite us to sensible goods and to everything that can procure them for us; and that this union involves us in infinite errors and very great miseries, although we do not always feel these miseries, just as we are not aware of the errors that cause them. Here is a most remarkable example.

The union we have had with our mothers in their womb, which is the closest we can have with men, has caused us the two greatest evils, namely, sin and concupiscence, which are the source of all our miseries. However, in order that our bodies be formed, it was necessary that this union be as close as it was.

Another union succeeded this first one, which was broken at our birth, and in this second union children tie themselves to their parents and their nurses. This second union was not as close as the first one, thus, it did us less harm; it only influenced us to believe our parents and nurses and to wish to imitate them in everything. It is obvious that this second union was also necessary not, as was the first, for the formation of our bodies but for their preservation, to know all the things that can be useful to it, and to dispose the body toward the movements necessary for acquiring them.

Finally, the union we still presently have with all men nevertheless causes us very much harm, even though it is not so close, because it is less necessary for the preservation of our bodies; for it is because of this union that we live by opinions, that we esteem and love everything that is loved and esteemed in the world, despite the remorse of our conscience and the true ideas we have of things. I am not speaking here of the union we have with the mind of other men, for from that union one can say that we receive some instruction. I speak only of the sensible union between our imagination and the air and manner of those who speak to us.

This is how all the thoughts we have as a result of our dependence upon our bodies are completely false, and the more dangerous for our soul as they are useful to our bodies.

Therefore, let us try to deliver ourselves gradually from the illusions of our senses, from the visions of our imaginations, and from the impressions that the imaginations of other men make upon our minds. Let us carefully reject all the confused ideas we have as a result of our dependence upon our bodies, and only admit the clear and evident ideas the mind receives through the union it necessarily has with the divine Word, or with eternal truth and wisdom, as we shall explain in the following book, concerning the understanding or the pure mind.

BOOK THREE

[PART ONE:] THE UNDERSTANDING, OR PURE MIND

Chapter One

I. Thought alone is essential to the mind. Perceiving and imagining are only modifications of it. II. We do not know all the modifications of which our soul is capable. III. Our sensations and even our passions are different from our knowledge and our love, and they are not always consequences of them.

The subject for this third treatise is rather dry and uninspiring. Here the mind is examined in itself and without any relation to the body, in order to discover the weaknesses and errors peculiar to it. The imagination and the senses are fertile and inexhaustible sources of errors and illusions, but the mind acting by itself is not so liable to err. Finishing the last two treatises was difficult; the difficulty with this one is in beginning. It is not that we cannot say enough about the mind's properties, but rather that its weaknesses more than its properties are sought after here. It should not be surprising, then, if this treatise is not as thick or if not as many errors are unearthed in it as in the preceding ones. Nor should there be any complaint if it is a bit dry, abstract, and trying. Our discourse cannot always stir people's senses and imagination, and we should not even always try to do so. When a subject is abstract, it can hardly be made perceptible to the senses without obfuscation; rendering it intelligible is enough. Nothing is more unfair than the common complaints of those who want to know everything and who are willing to apply themselves to nothing. They become annoyed when asked to become attentive; they want their senses and passions to be acted upon constantly. But what matter? We realize we cannot satisfy them. Writers of novels and comedies are called upon to please and entertain. We are satisfied if we can instruct those who themselves expend the effort to become attentive.

The errors of the senses and of the imagination stem from the constitution and nature of the body and are revealed by considering the soul's dependence on it; but the errors of the pure understanding can be uncovered only by considering the mind itself and the ideas necessary to it for knowing objects. Thus, in order to reach the causes of the pure understanding's errors, we shall have to pause here in this third book to consider first the nature of the mind and then of intellectual ideas.

We shall first discuss the mind as it is in itself and without any relation to the body to which it is joined. Accordingly, what will be said about it could be said as well about pure intelligences and *a fortiori* about what we have here called pure understanding, for by the expression *pure understanding*, nothing is meant but the mind's faculty of knowing external objects without forming corporeal images of them in the brain to represent them. We shall then deal with intellectual ideas, by means of which the pure understanding is aware of external objects.

I. Thought alone is essential to the mind. Sensing and imagining are only modifications of it.

I do not think that, after some serious thought on the matter, it can be doubted that the mind's essence[a] consists only in thought, just as the essence of matter consists only in extension. Nor can it be doubted that, depending on the various modifications of thought, the mind now wills, now imagines, and has many other particular forms, just as matter, depending on the various modifications of extension, is now water, now fire, now wood, and has an infinity of other particular forms.

I warn only that by the word *thought*, I do not mean the soul's particular modifications, i.e., this or that thought, but rather substantial thought, thought capable of all sorts of modifications or thoughts, just as extension does not mean this or that extension, such as a circle or a square, but extension capable of all sorts of modifications or figures. This comparison will be uncomfortable only because we have no clear idea of thought as we do of extension, for thought is known only through inner sensation or *consciousness*, as I shall explain below.

I think, further, that no mind can be conceived of that does not think, though it is quite easy to conceive of one that does not sense or imagine, and that does not even will, just as unextended matter cannot be conceived of, though it is possible to conceive of matter that is neither earth nor metal, neither square nor round, and that even has no motion. From this it must be concluded that as there can be matter that is neither earth nor metal, neither square nor round, nor even in motion, there can also be a mind that perceives neither hot nor cold, neither joy nor sadness, imagines nothing and even wills nothing; consequently, such modifications are not essential to it. Thought alone, then, is the essence of mind, just as extension alone is the essence of matter.

But as matter or extension without motion would be useless and could not assume the forms for which it was created, and as an intelligent being could not conceivably have willed to produce such a thing, so a mind or thought without volition would clearly be altogether useless, since the mind would never be led toward the objects of its perceptions and would not love the good for which it was created. Consequently, an intelligent being could not conceivably have willed to produce the mind in this state. Nonetheless, as motion is not the essence of matter since it presupposes extension, so willing is not the essence of mind since willing presupposes perception.

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[a] By the essence of a thing, I mean what is first conceived in the thing, on which all the modifications noticed in it depend.

Thought alone, then, is what properly constitutes the essence of mind, and the different modes of thinking, such as sensing and imagining, are but the modifications of which it is capable and by which it need not always be modified. But willing is a property that always accompanies it, whether joined to, or separated from, the body, but that is not essential to it, since volition presupposes thought and since like a body without motion, a mind without volition is conceivable.

Nevertheless, the power of volition, though it is not essential to it, is inseparable from mind—as mobility, though not essential to it, is inseparable from matter. For just as immovable matter is inconceivable, so a mind incapable of willing or of some natural inclination is inconceivable. But again, as matter can conceivably exist without any motion, likewise can the mind conceivably be without any impression of the Author of nature, leading it toward the good; and consequently it can be without any volition, for the will is nothing but the impression of the Author of nature that leads us toward the good in general, as has been explained at length in the first chapter of this work.

II. We do not know all the modifications of which our soul is capable.

What we have said in this treatise concerning the senses, as well as what we have just said about the nature of the mind, does not presuppose that we know all the modifications of which it is capable. We make no such assumption. On the contrary, we believe the mind has a capacity for receiving, one after another, an infinity of different modifications previously unknown to it.

The least part of matter can receive a figure of three, six, ten, or ten thousand sides, or finally a circular or eliptical shape that may be viewed as a figure of an infinite number of sides and angles. There is an infinite number of different kinds of each of its figures—an infinite number of different kinds of triangles, and even more different figures of four, six, ten, and ten thousand sides, or of infinite polygons, for the circle, the ellipse, and generally every figure (regularly or irregularly curvilinear) can be considered as an infinite polygon. The ellipse, for example, can be considered as an infinite polygon whose angles forming its sides are unequal, being greater toward the small diameter than toward the large, and so on for other more complex and more irregular infinite polygons.

A simple piece of wax is therefore capable of an infinite number, or rather, of an infinitely infinite number of modifications that no mind can comprehend—why believe, then, that the soul, which is much nobler than the body, is capable only of the modifications it has already received?

If we had never felt pleasure or pain, if we had never seen color or light, in a word, if we were with regard to everything as the blind and the deaf are to colors and sounds, we would be right to conclude that we were incapable of all the sensations we have of objects. Yet these are but modifications of our soul, as we have proved in our treatment of the senses.

It must be agreed, then, that the soul's capacity for receiving different modifications is as great as its capacity for conceiving, i.e., as the mind cannot exhaust or comprehend all the figures of which matter is capable, so it cannot comprehend all the various modifications the mighty hand of God can produce in the soul, even if it were true (as it is not, for the reasons I shall give in chapter seven of the second part of this book) that the mind knew the soul's capacity as distinctly as it knows matter's.

If our soul in its present state receives but few modifications, it is because the soul is joined to a body and depends on it. All its sensations are related to its body, and as it is not possessed of God, it has none of the modifications that possession must produce. The matter of which our body is composed is capable of but few modifications during our lifetime. This matter cannot be broken down into earth and moisture until after our death. Right now it cannot become air, fire, diamond, or metal, it cannot become round, square, or triangular; it has to be flesh, brain, nerves, and the rest of a man's body so that the soul may be joined to it. The same is true of our soul; it must have sensations of heat, cold, color, light, sounds, odors, tastes, and several other modifications in order to remain joined to its body. All its sensations direct the soul to the preservation of its machine. They agitate the soul and frighten it as soon as the least spring is unwound or broken, and as a result the soul must be subject to the body as long as the body is subject to corruption. But it is reasonable to believe that when the body is clothed with immortality, and we no longer fear the dissolution of its parts, our soul will no longer be affected by the unpleasant sensations we feel against our wishes. Instead, it will be affected by an infinity of completely different sensations of which we now have no idea, and which will be beyond all sensation and will be worthy of the goodness and grandeur of the God we shall possess.

There is no justification for imagining such insight into the soul's nature as to allow us to assert that it is capable only of knowledge and love. This might be maintained by those who attribute their sensations to external objects or to their own bodies, and who hold that their passions are in their hearts; for indeed, if its passions and sensations are taken away from the soul, all that remains is but a consequence of knowledge and love. But I cannot conceive how those who have been delivered from the illusions of our senses can be convinced that all our sensations and passions are but knowledge and love, i.e., kinds of confused judgments the soul passes on objects in relation to the body it animates. I do not understand how light, colors, odors, and such, can be said to be judgments of the soul, for I seem to be distinctly aware to the contrary that light, colors, odors, and the rest of the sensations are modifications completely different from judgments.

III. Our sensations are different from our knowledge and love, and they are not the consequences of them.

But let us pick out the livelier sensations that occupy the soul more. Let us take a look at what these people say about pleasure and pain. Following several very important authors,[a] they would have these sensations be but the consequences of our faculty of knowing and willing, and pain, for example, be but the regret, opposition, and aversion the will has for things it knows to be injurious to the body it loves. But it seems to me evident that pain is confused here with sorrow, and that far from being a consequence of the mind's knowledge and the will's action, pain rather precedes both of these.

If, for example, a burning coal were placed in the hand of a man who is sleeping or who is warming his hands behind his back, I do not think any plausibility can be given to the claims (a) that this man would first know that motion contrary to the well-being of his body was taking place in his hand; (b) that his will would then oppose this motion; and (c) that his pain would be a consequence of his mind's knowledge and his will's opposition. It seems to me, on the contrary, that pain undoubtedly would be the first thing this man would be aware of when the coal touched his hand, and that the mind's knowledge and will's opposition are but consequences of pain, though they are indeed the cause of the sadness following the pain.

Yet there is a big difference between this pain and the sadness it produces. The pain is the first thing the soul feels; it is not preceded by any knowledge, and it can never be pleasant by itself. The sadness, on the other hand, is the last thing the soul feels; it is always preceded by some knowledge and is always quite pleasant by itself. This is clear enough from the pleasure accompanying the sadness felt at viewing baleful events in theater plays, for this pleasure increases with the sadness, whereas pleasure never increases with pain. Playwrights who study the art of pleasing people know well that the theater must not be bathed in blood, because the sight of a murder, though pretended, would be too terrible to be pleasant. But they have no worries about causing too much sadness in their audiences, because when there is occasion to be affected by it, sadness is indeed pleasant. There is, then, an essential difference between sadness and pain, and we cannot say that pain is nothing other than the mind's knowledge in conjunction with the will's opposition.

As for the other sensations, such as odors, tastes, sounds, and colors, most men do not think that they are modifications of their soul. On the contrary, they judge that they are spread over objects, or at least that they are in the soul only as is the idea of a square or circle, i.e., that they are joined to the soul, but not as modifications of it. They make this sort of judgment because these sensations do not affect them much, as I showed while explaining the errors of the senses.

I think it must be agreed that not all the modifications of which the soul is capable are known, and that besides those it has through the sense organs, it may have an infinity of others it has not experienced and will experience only after it has been delivered from the captivity of its body.

Yet it must be admitted that just as matter is capable of an infinity of different configurations only because of its extension, so the soul is capable of different modifications only because of thought; for it is clear that the soul could not have the modifications of pleasure or pain, or even those that are indifferent to it, were it incapable of perception or thought.

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[a] St. Augustine, bk. 6, *De musica;* Descartes, in his *Man*, etc.

It is enough that we know that thought is the principle of all these modifications. Even if you would have something in the soul preceding thought, I have no wish to disagree. But as I am certain that no one has any knowledge of his soul except through thought, or through the inner sensation of all that takes place in his mind, I am convinced as well that if someone wishes to consider the nature of the soul, he need only consult this inner sensation, which continually represents to him what he is, and he should not fancy, contrary to his own consciousness, that the soul is an invisible fire, or subtle air, or a harmony, or some other such thing.

BOOK THREE: PART ONE
Chapter Two

I. Being limited, the mind cannot understand what involves the infinite. II. Its limitation is the source of many errors. III. And especially of heresies. IV. The mind must be subordinated to faith.

I. Being limited, the mind cannot understand what involves the infinite.

What we immediately find in man's thought, then, is that it is very limited, from which two very important consequences follow. The first is that the soul cannot perfectly know the infinite. The second is that it cannot even know distinctly several things simultaneously. Just as a piece of wax is incapable of having an infinity of different figures simultaneously, so the soul is incapable of knowing an infinity of objects simultaneously. Further, just as a piece of wax cannot be both square and round at the same time, but only half round and half square, and as the more different figures it has, the less perfect and distinct it will be, so the soul cannot perceive several things at the same time, and its thoughts are the more confused as they are more numerous.

In short, just as a piece of wax having a thousand sides with a different figure for each side would be neither square, nor round, nor oval, and as we could not say what figure it had, so it sometimes happens that we have so many different thoughts that we believe we are thinking about nothing at all. This is seen in the case of people who fall into a swoon. The animal spirits, swirling irregularly in their brain, stir up so many traces that no one of them is opened sufficiently to excite a particular sensation or distinct idea in the mind. As a result of this, these people perceive so many things simultaneously that they perceive nothing distinct—which leads them to think they have perceived nothing.

Not that we do not sometimes fall into a swoon for want of animal spirits; but what happens then is that the soul has thoughts only of pure intellection, which leave no traces in the brain, and so we do not remember them after coming to—which leads us to believe we thought of nothing at all. I mention this in passing to show that we wrongly believe that the soul does not always think because we sometimes fancy that the soul is thinking of nothing at all.

II. The mind's limitation is the source of many errors.

Anyone who reflects a little on his own thoughts has enough experience to know that the mind cannot attend to several things at the same time and, *a fortiori*, that it cannot penetrate the infinite. Yet I do not know through what caprice people ignorant of this busy themselves with meditating more on infinite objects and on questions demanding the capacity of an infinite mind than on others more suited to their mind, and why there are still so many others who, wishing to know everything, apply themselves to so many sciences at the same time that they confuse the mind and render it incapable of any true science.

How many people are there who want to understand the infinite divisibility of matter and how a tiny grain of sand can contain as many parts, though proportionately smaller, as the entire earth? How many questions are formed, which will never be resolved with regard to this and many other subjects involving the infinite,[a] whose solution they seek in their own minds? They worry and sweat over it, and all they gain in the end is to become obstinate about some error or absurdity.

Is it not a ludicrous thing to see people deny the infinite divisibility of matter just because they cannot understand it (although they may understand quite well the demonstrations proving it), and at the same time admit verbally that the human mind cannot comprehend the infinite. The proofs of the infinite divisibility of matter are conclusive, if ever there were any, and when carefully considered, they are acknowledged as much. Nonetheless, when these people are presented with objections they cannot resolve, their mind turns away from the evidence they have just seen and they begin to doubt. They occupy themselves a great deal over an objection they cannot resolve, they invent some frivolous distinction against the demonstrations of the infinite divisibility of matter, and they finally conclude that they were, and everyone else now is, mistaken about the matter. They then embrace the opposite position. They defend it with the bombast and absurdity the imagination can always supply. Now, they fall into these errors only because they are not inwardly convinced that the human mind is finite and because, in order to be convinced of the infinite divisibility of matter, the mind need not understand it, because all the objections that can be resolved only by understanding it are objections that cannot be resolved. Indeed, extension, duration, and speed are such that their commensurable relations can be known exactly, because these relations are finite magnitudes expressed by finite ideas. But no finite mind can comprehend these magnitudes in themselves and taken absolutely.

If men spent time only with such questions, there would not be cause for great concern; because although some of them may be involved in certain errors, these errors are of little consequence. As for the others, they have not entirely wasted their time in thinking about things they cannot understand, because they have at least convinced themselves of their mind's weakness. It is a good thing, a wise author[a] has said, to exhaust the mind with these subtleties in order to tame its presumption and eliminate its audacity ever to oppose its feeble lights against the truths offered it by the Church under pretext that it cannot understand them. For, given that all the power of a man's mind is constrained to succumb to the smallest atom of matter, and to acknowledge that it clearly sees this atom to be infinitely divisible without being able to understand how it can be, is it not an obvious sin against reason to refuse to believe the wonderful effects of God's omnipotence (itself incomprehensible) because our mind cannot comprehend them?

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[a] Such as time, speed, and whatever varies quantitatively.

The most dangerous result of ignorance, or rather of inadvertance to the weakness and limitation of the human mind, and consequently to its inability to understand what belongs to the infinite, is heresy. More now than at any other time, it seems to me, there are many people who create their own theology, based on nothing but their own mind and the natural weakness of reason, because even in subjects not under the jurisdiction of reason, they wish to believe only what they can understand.

The Socinians can understand the mysteries neither of the Trinity nor of the Incarnation. This fact is enough for them to refuse belief and even to say with haughty scorn of those who do believe that they are born to slavery. A Calvinist cannot conceive how it can be that the body of Jesus Christ is really present in the sacrament of the altar at the same time it is in heaven. From this he thinks himself right to conclude that it cannot be, as if he understood perfectly the limits of God's power.

If a man, even one who is convinced he is free, exercises himself trying to reconcile God's knowledge and decrees with freedom, he might fall into the error of those who do not believe that men are free. For, on the one hand unable to conceive how the Divine Providence can subsist with human freedom, and on the other hand prohibited by his respect for religion from denying Providence, he will feel compelled to strip man of his freedom. Failing to reflect sufficiently on his mind's weakness, he will fancy himself capable of penetrating the means God has for reconciling His decrees with our freedom.

But heretics are not the only ones who lack attention in considering their mind's weakness and who allow their mind too much freedom in judging things not under its jurisdiction—practically all men have this fault especially certain theologians in recent times. For it might be said that some of them so often employ human arguments to prove or explain mysteries beyond reason (though they may do so with good intent and to defend religion against heretics) that they often give occasion to these same heretics to cling obstinately to their errors while treating the mysteries of faith as human opinions.

Agitation of mind and the subtleties of the School are not conducive to making men aware of their weakness or to instilling in them the spirit of submission so necessary for accepting the Church's decisions with humility. Rather, all these subtle, human arguments can rouse in them their secret pride; they lead them to misuse their mind by framing a religion suitable to its capability. Furthermore, we never see heretics either yielding to philosophical arguments or realizing and condemning their errors as a result of reading purely Scholastic books. On the contrary, we see them daily seize upon the weakness of certain Scholastics' arguments to ridicule the most sacred mysteries of our religion, which in fact is established not on these human arguments and explanations but solely on the authority of the word of God, written or unwritten, i.e., written or carried down to us by tradition.

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[a] *The Art of Thinking* [pt. 4, ch. 1].

Indeed, human reason does not inform us that there are three persons in one God, that the body of Jesus Christ is really in the Eucharist, or how it is that man may be free but God knows from all eternity what he will do. The reasons adduced to prove or explain these things ordinarily do so only for those willing to admit them without examination, but often seem foolish to those who are willing to resist them and who are not in fundamental agreement with those mysteries. It might be said, rather, that the objections raised against the main articles of our faith, especially against the mystery of the Trinity, are so strong that they cannot be given solutions that are clear and convincing and that do not in any way shock our feeble reason, for these mysteries are indeed incomprehensible.

The best way of converting heretics, then, is not to accustom them to using their minds by supplying them only with unsound arguments drawn from philosophy, because the truths in which we wish to instruct them are not under the jurisdiction of reason. It is not even always proper to use these arguments with truths that can be proved by both reason and tradition (such as the immortality of the soul, original sin, the necessity of grace, the corruption of nature, and several others) for fear that their mind, having once tasted the evidence of arguments in these questions, would be unwilling to submit to those that can be proved only from tradition. Rather, they should be made to distrust their own mind by having its weakness, limitation, and disproportion with our mysteries made plain to them; and when their mind's pride has been conquered, it will then be easier to introduce them into the views of the church by putting it to them that infallibility is included in the idea of every divine society[a] and by explaining to them, if they are capable of it, the tradition of the ages.

But if men continually disregard the weakness and limitation of their mind, their courage will be swelled by an indiscrete presumption, they will be dazzled by a false light, and love of glory will blind them. Thus, heretics will always be heretics, and philosophers unyielding and perverse; and dispute about all things disputable will continue as long as dispute is found pleasing.

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[a] See the thirteenth of the *Dialogues on Metaphysics and Religion*.

BOOK THREE: PART ONE

Chapter Three

I. Philosophers dissipate the mind by applying it to subjects that contain too many relations and that depend on too many things without following any order in their studies. II. An example drawn from Aristotle. III. That geometers, on the other hand, proceed properly in the search after truth, particularly those who make use of algebra and analysis. IV. That their method increases the mind's strength; whereas Aristotle's logic diminishes it. V. Another defect of learned men.

I. That philosophers lack order in their studies.

Men fall into a great number of errors not only because they concern their finite minds with questions involving the infinite but also because they concern their minds, which have little scope, with questions whose scope is quite vast.

We have already said that as a piece of wax is incapable of simultaneously receiving several perfect and distinct figures, so the mind is incapable of receiving several distinct ideas, i.e., it is incapable of perceiving several things very clearly at the same time. From this it is easy to conclude that attention should not first be given to the search after hidden truths the knowledge of which involves the knowledge of too many things, some of which are not known at all or are not familiar enough to us; for study should proceed in an orderly fashion by employing what is known distinctly in order to apprehend what is not known at all or only confusedly. Yet the greater part of those engaged in study do not proceed in this way at all. They never determine their own strength or consider the range of their mind. A secret vanity and an inordinate desire for knowledge—not reason—reigns over their studies. Without consulting reason, they undertake the discovery of the most hidden and impenetrable truths as well as the resolution of questions that depend on so many relations that the quickest and most penetrating minds were able to discover their truth only after many centuries and an almost infinite number of experiments.

In medicine and in morals there are a great number of questions of this sort. All the sciences dealing in detail with bodies such as animals, plants, metals, and their qualities, are sciences that can never be sufficiently clear or certain—

particularly if we cultivate them only as we have until now and if we do not begin with the simplest and least complex sciences on which they depend. But learned men are unwilling to take pains about orderly philosophizing—they do not agree about the certainty of the principles of physics, they themselves agree that they are ignorant of the nature both of body in general and of its qualities. Yet they fancy themselves able to explain why, for example, the hair of old people turns white and their teeth black, and other such questions depending on so many causes that no certain explanation of them can be given. For that it is necessary to know what the whiteness of each hair consists in, the humors on which it feeds, the body's filters through which these humors pass, the structure of the hair's roots or the skin through which they pass, and the difference in all these things between an old man and a young man—all of which is absolutely impossible, or at least very difficult, to know.

II. An example of the lack of order in Aristotle.

Aristotle pretended, for example, not to be ignorant of the cause of whiteness in the hair of old people; he gave several explanations of it at various places in his works. But as a genius in natural things, he did not rest content with that; he went further. He discovered that the cause which made old people's hair white was the same cause that made some people, and even some horses, have one eye blue and the other of another color. Here are his own words: *Ἑτερόγλαυκοι δε μάλιωτα γίνονται καΐ οΐ ἄνθρωποι καὶ οΐ ΐπποι διὰ τὴν αύτὴν αιτίαν δΐ ἥνπερ ὸ μὲν ἄνθρωπος ρολιοῦται μόνον*.[a] This is rather surprising, but then nothing was hidden from that great man. In practically all his works on physics, he accounted for so many things the most enlightened among us find impenetrable that it is truly said of him that he was given to us by God that we be ignorant of nothing that can be known. "Aristotelis doctrina est SUMMA VERITAS, quoniam ejus intellectus fuit finis humani intellectus. Quare bene dicitur de illo, quod ipse fuit creatus & datus nobis divina providentia, ut non ignoremus possibilia sciri." Averroes should even have said that Divine Providence has given us Aristotle to teach us what cannot be known. For truly, this philosopher teaches us not only things that can be known but also things that cannot be known, since he must be taken at his word and his doctrine is the SUMMA VERITAS, the SOVEREIGN TRUTH.

Certainly faith is needed to believe Aristotle in this way when he only gives us reasons from logic, and when he explains natural effects only with the confused notions of the senses, especially when he boldly decides on questions we do not see as within man's ability ever to resolve. Aristotle himself warns therefore that he should not be believed on his word alone; it is an incontrovertible axiom with this author that the disciple is to believe *δεῖ πιώτεύειν τὸν μανθάνοντα*.

Disciples are indeed sometimes obliged to believe their master, but their faith need extend only to facts and matters of experience. For if they really want to become philosophers, they must examine their master's explanations and not accept them until they have seen the clarity of them with their own light. But to be a Peripatetic philosopher, only belief and memory are required; this philosophy should be read with the same attitude of mind with which one reads history. For if one takes the liberty of using one's mind and reason, one should not hope to become a great philosopher; *δεῖ γὰρ πιστεύειν τὸν μανθάνοντα*.

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[a] *De gen. an.* bk. 5. ch. 1.

But the reason why Aristotle as well as a great number of other philosophers have pretended to know what can never be known is that they have not clearly understood the difference between kinds of knowing, between having certain knowledge and having only probability. And the reason why they have not made this distinction is that with the subjects of their attention always being of greater scope than their minds, they have generally seen only part of their subjects without being able to embrace the whole. This suffices for discovering a few probabilities, but not for discovering the truth with evidence. Besides which, since they seek after science only because of vanity, and since probabilities (because they are more suited to the scope of ordinary minds) are better adapted than truth itself to winning the esteem of men, they have neglected to seek the means necessary to increase the mind's capacity and extend its present scope. As a result, they have been unable to get to the bottom of truths that are at all hidden.

III. Geometers proceed properly in the search after truth.

Only geometers have recognized the limited scope of the mind—at least they conduct their studies in such fashion as to indicate they comprehend it perfectly—especially those who avail themselves of the algebra and analysis revived and perfected by Viète and Descartes in this century. This is apparent from their never trying to resolve very complex and difficult things until the simpler matters on which they depend have been clearly known. They do not begin to consider curved lines, such as conic sections, until they have mastered simple geometry. But the unique thing about the practitioners of analysis is that because they see their mind incapable of attending to several figures simultaneously, or even of imagining solids having more than three dimensions (though it is often necessary to conceive them as having many more dimensions), they avail themselves of ordinary letters, which are perfectly familiar to us, in order to express and simplify their ideas. With the mind neither hampered nor occupied with having to represent a great many figures and an infinite number of lines, it can thus perceive at a single glance what it could not otherwise see, because the mind can penetrate further and embrace more things when its capacity is used economically.

IV. The method of geometers increases the mind's capacity, whereas Aristotle's diminishes it.

As a result of this, the whole art of making the mind more extensive and more penetrating consists, as we shall explain elsewhere,[a] in using its powers and its capacity sparingly, and not using it inappropriately on matters unnecessary for the discovery of the truth it is seeking—and this is a point that should be well noted. This alone shows that the ordinary sorts of logic are more suited for diminishing rather than increasing the mind's capacity, because clearly, if in the search after a given truth one wishes to use the rules these logics give us, the mind's capacity will be so divided up that it will have less capacity for carefully understanding the full extent of the subject under examination.

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[a] Book 6, in the first part on method.

From what has just been said, it seems clear enough that most men have hardly reflected at all about the nature of the mind when they have tried to employ it in the search after truth. They have never been thoroughly convinced of its limited scope and of the necessity of using it economically and even of increasing it. This is one of the greatest causes of their errors and of the fact that they have such poor success in their studies.

I do not maintain however, that there have been people ignorant of the fact that their mind was limited, and that it had little scope and capacity. Undoubtedly, everyone has known this and everyone admits it, but most people know it only in a confused way and acknowledge it only verbally. The conduct of their studies belies their own confession, since they act as if they really believe the mind has no limits, and they wish to delve into things depending on a great number of causes, none of which usually is known to them.

V. Another defect of learned men.

There is still another defect found frequently enough among learned men, viz, that they apply themselves to too many sciences at the same time, and if they study six hours daily, they sometimes study six different things. This fault clearly proceeds from the same cause as the others just discussed, for it is highly probable that if they who studied in this fashion only knew clearly that their method is not suited to their mind's capacity and is more conducive to filling it with confusion and error than with true science, they would not give in to the inordinate impulses of their passions and vanity. Indeed, this is not the way to satisfy vanity, for it is precisely the way to know nothing.

BOOK THREE: PART ONE

Chapter Four

I. The mind cannot long dwell on objects that have no relation to it, or that do not in some way involve the infinite. II. Inconstancy of will is the cause of this lack of attention and, consequently, of error. III. We are occupied more with our sensations than with the mind's pure ideas. IV. From this springs the corruption of morals. V. As well as the ignorance of the ordinary man.

<*I. The mind cannot long dwell on objects that have no relation to it, or that do not in some way involve the infinite.*>

The mind of man is liable to error not only because it is not infinite and has less scope than the objects it considers, as we have just explained in the two preceding chapters, but also because it is inconstant, lacks resoluteness in its action, and cannot keep its perception fixed on a subject long enough to examine it completely.

To understand the cause of this inconstancy and weakness on the part of the human mind, it should be noted that the will directs its action, that the will applies it to the objects it loves, and that the will itself is continually anxious and inconstant. The cause of this is as follows.

It cannot be doubted that God is the author of all things, that He created them for Himself, and that through an invincible natural impression that He continuously impresses in it, He inclines the heart of man toward Himself. God cannot will that there be a will that does not love Him or that loves Him less than some other good (if there could be any other good), because He cannot will that a will not love what is supremely worthy of love or love what is less worthy of love. Thus, natural love necessarily leads us toward God, since it comes from God and nothing can arrest its impulse but God Himself who impresses it. There is, then, no will that can fail to follow the impulse of this love. The just, the impious, the blessed, and the damned all love God with this love. Given that this natural love we have for God is the same thing as our natural inclination toward the good in general, toward the infinite good, toward the sovereign good, it is clear that all minds love God with this love because only He is the universal good, the infinite good, the sovereign good. For, ultimately, all minds, and even demons, fervently desire to be happy and to possess the sovereign good, and they desire it without choice, deliberation, or freedom, but by the necessity of their nature. Since we are made for God, then, for an infinite good, for a good that includes all goods within itself, the natural impulse of our heart will cease only with the possession of this good.

II. Inconstancy of will is the cause of the mind's lack of attention and, consequently, of error.

Thus, with the will always parched by a burning thirst, always driven by anxieties and desires for the good it does not possess, it cannot comfortably allow the mind to dwell for any time over abstract truths that do not affect it and that it judges incapable of making it happy. Thus, it continuously urges the mind to consider other objects, and when in the course of being driven by the will the mind encounters an object bearing the mark of goodness, i.e., an object whose presence makes the soul feel a calm interior satisfaction, the heart's thirst is then renewed, these desires and longings are rekindled, and the mind, required to obey them, attends only to the object causing them, or appearing to cause them, in order to bring it near the soul, which then tastes and feeds on it for awhile. But since the emptiness of created things cannot fill the infinite capacity of man's heart, these trifling pleasures, instead of quenching its thirst, only aggravate it and give the soul the vain and foolish hope of being satisfied by the multiplicity of terrestrial pleasures. This leads to a further inconstancy and inconceivable weakness on the part of the mind whose duty it is to find these goods for the soul.

It is true that when by chance the mind encounters an object involving the infinite, or containing something of great magnitude, its inconstancy and agitation temporarily cease. For, realizing that the object bears the mark of what is desired by the soul, it pauses and attends to it for awhile. But this attachment, or rather, obstinancy on the part of the mind in examining objects that are infinite or too vast, does it no more good than the weakness with which it considers objects suited to its capacity. The mind is too weak to complete such a difficult undertaking, and only in vain does it try to do so. What must make the soul happy is not, as it were, the comprehension of an infinite object—of this it is incapable—but the love and possession of an infinite good, which the will is capable of through the impulse of love continually impressed on it by God.

Given all this, men's ignorance and blindness should not be surprising—since their mind, subjected to the inconstancy and weakness of their heart, which make it incapable of seriously considering anything, can penetrate nothing involving any significant difficulty. For, in a word, the mind's attention stands to its objects as the eyes' steady gaze stands to the objects of vision. And just as a man incapable of fixing his eyes on the bodies surrounding him cannot see them clearly enough to distinguish the differences in their tiniest particles, or to recognize all the relations these particles have among themselves—so a man incapable of fixing his mind's perception on the things he wishes to know cannot know them well enough to distinguish their parts or to know all the relations they can have among themselves or with other subjects.

Yet it is certain that all knowledge consists only in the clear perception of the relations objects have with each other. Consequently, when it happens, as in difficult questions, that the mind must see at a glance a great many relations between two or more objects, it is clear that if it has not carefully considered them and if it knows them only confusedly, it will be unable to perceive their relations distinctly, and, as a result, will be unable to form a well-founded judgment about them.

III. We are occupied more with our sensations than with the mind's pure ideas.

One of the main causes of our mind's lack of application to abstract truths is that we view them as remote, whereas things much closer to the mind are constantly being presented to it. The mind's close attention, as it were, brings the ideas of objects it is attending to much closer, but it often happens that when one is intent upon metaphysical speculations, one is distracted from them because some sensation crops up in the soul that is, as it were, still closer to it than its ideas. All that is needed for this is a bit of pain or pleasure, since pleasure and pain, and generally all sensations, are within the soul itself—they modify and affect it more than do the simple ideas of pure intellection, which, though present to the mind, do not modify or affect it sensibly. Thus, given that the mind on the one hand is of limited scope and on the other is unable to avoid feeling pain and its other sensations, its entire capacity is taken up by them. It cannot simultaneously sense something and freely think about other objects that cannot be sensed. The buzzing of a fly, or some other slight noise—given that it is communicated to the main part of the brain so that the soul may perceive it—in spite of our resistance is capable of preventing us from thinking about the loftiest abstract truths, because no abstract idea modifies the soul as sensations do.

IV. This is the source of the corruption of morals.

This is the cause of the mind's stupidity and lethargy with regard to the greatest truths of Christian morality, as well as of the fact that without the grace of Jesus Christ, men know them only in a vague and useless way. Everyone knows that there is a God who must be served and adored, but who serves and adores Him without that grace which alone makes us relish and enjoy these duties? There are very few people who do not perceive the emptiness and unreliability of terrestrial goods, and who are not convinced (in the abstract, though very clearly and certainly) that they do not deserve our attention and care. But where are those who despise these goods in practice, and who spare the attention and worry to acquire them? Only they who feel some distaste or bitterness in their enjoyment, or whom grace has made receptive to spiritual goods through an interior delight that God attaches to them, only they conquer the impressions of sense and the urges of concupiscence. The mind's perception by itself is never enough to make us resist the urges of concupiscence as we should; besides perception, a sentiment of the heart is required. This illumination of the mind by itself is, if you will, a grace sufficient only for condemning us, for making us aware of our weakness and of our need for appealing through prayer to Him who is our strength.But this sentiment of the heart is a living, functioning grace. It affects us, fills us, and inclines our heart; and without it, no one [can] ponder with the heart: *Nemo est qui recogitet corde*. The most certain truths of morality rest hidden in the folds and recesses of the mind, and they are sterile and impotent as long as they remain there, since the soul fails to notice them. But sense pleasures are much closer to the soul, and given that the soul cannot fail to sense, and even to love pleasure,[a] it cannot through its own means withdraw from the earth and rid itself of the charms and illusions of its senses.

I do not deny, however, that the righteous, whose heart has already been inclined toward God by a prevenient delight, can perform meritorious actions or resist the urges of concupiscence without this particular grace.[b] There are those who endure in God's Law through the strength of their faith, through the care they take in abstaining from sensible things, and through their contempt and disgust for all that might tempt them. There are those who act almost always without enjoying this involuntary and prevenient pleasure of which I speak. The joy they find in acting in accordance with God is the sole pleasure they enjoy, and this pleasure is enough to keep them in their present state and to confirm the disposition of their heart. As they love God and the Holy Law, they ponder them with great joy (for one always thinks with great pleasure about things one loves, or what amounts to the same thing, one relinquishes them only reluctantly), and that alone enables the righteous to overcome at least the smaller temptations. But those who are beginning their conversion have need of this involuntary and prevenient pleasure in order to abstain from sensible goods, to which they are attracted by other such pleasures; the grief and remorse of their conscience are not enough, and they do not yet have any joy. The just, however, are able to live by faith in trying circumstances. In this state they are even more meritorious, because given that men are rational, God wills to be loved by them with a freely chosen love rather than with an instinctive, unwilled love like that with which sensible goods are loved, i.e., without their being known as good except through the pleasure they give. Yet most men, being of little faith and continually finding themselves in a position to enjoy these pleasures, cannot long preserve their voluntary love for God against their natural love of sensible goods unless the delight of grace supports them against the urges of sensual delight—for the delight of grace induces, preserves, and increases charity, as sensible pleasures do cupidity.

V. And men's ignorance.

It should be clear from what has been said above, that the capacity and scope of man's mind is very much taken up with the passions and sensations (agreeable or vexing) it always has, and that when man wishes to use the rest of its capacity to examine some truth, he is often distracted from doing so by new sensations, by

[a] I.e., with a natural love, for we cannot dislike pleasure with a chosen or elected hatred.

[b] Because a freely chosen love cannot long exist without conforming to natural love.

the distastefulness of this enterprise, and by the inconstancy of the will, which disturbs the mind and unceasingly leads it from one object to another. As a result of this, if the habit of conquering these obstacles is not acquired at an early age (as has been explained in the second part), you will find yourself incapable of understanding anything at all difficult or requiring any attention.

From this it must be concluded that all the sciences, and particularly those involving difficult questions, are filled with an infinite number of errors, and that our suspicion should fall upon those thick volumes being written every day on medicine, physics, and morals, and especially on the particular questions in these sciences, which are much more complex than the more general questions. Indeed, these books ought to be scorned to the extent that they are well received by the common man, i.e., by those who can concentrate but little and do not know how to use their mind, because people's applause for an opinion on a difficult matter is an infallible sign that the opinion is false and is based on the deceptive ideas of the senses or on illusions of the imagination.

Yet it is not impossible for a single man to discover a great many truths that lay hidden to past centuries—given that this person is of sound mind, and that alone and as far away as possible from anything that might distract him, he applies himself diligently to the search after truth. This is why people are not very reasonable when they scorn Descartes's philosophy without knowing it, and for the single reason that it seems impossible that one man should have found the truth about things so hidden as those of nature. But if they knew the way this philosopher lived, the means he used in his studies in order to prevent his mind's capacity from being divided up by objects other than those about which he wanted to discover the truth, the clarity of the ideas on which he founded his philosophy, and generally all the advantages he had over the ancients through new discoveries, they would thereby acquire a prejudice on his behalf stronger and more reasonable than that of antiquity, which endorses Aristotle, Plato, and several others.

Nevertheless, I would not advise them to remain in this prejudice, believing that Descartes was a great man whose philosophy is good on account of the favorable things that can be said about him. Descartes was a man among men, and like men, subject to error and illusion; there is not a one of his works, including even his Geometry, that does not bear the mark of the human mind's weakness. He should not be believed on his word, then, but should be read as he himself warns us—with great care, examining whether he has not made a mistake, and believing nothing he says until obliged to do so by evidence and the secret reproaches of our reason. For, in a word, the mind truly knows only what it sees with evidence.

In the preceding chapters we showed that our mind is not infinite, rather, that it has an unimpressive capacity, that this capacity is usually filled by the soul's sensations, and finally, that the mind, being directed by the will, cannot fix its perception on an object without soon being distracted from it by its own inconstancy and weakness. These things are unquestionably the most general causes of our errors, and we might pause here further to view them in detail. But what has been said is enough to show those capable of a little attention the weakness of the mind of the man. In the fourth and fifth books, the errors caused by our natural inclinations and passions (of which we have already just said something in this chapter) will be discussed at greater length.

BOOK THREE

PART TWO: THE PURE UNDERSTANDING.

THE NATURE OF IDEAS

Chapter One

I. What is meant by ideas. That they really exist and are necessary in order to perceive any material object. II. A classification of all the ways external objects can be seen.

<I. What is meant by ideas.>

I think everyone agrees that we do not perceive objects external to us by themselves. We see the sun, the stars, and an infinity of objects external to us; and it is not likely that the soul should leave the body to stroll about the heavens, as it were, in order to behold all these objects. Thus, it does not see them by themselves, and our mind's immediate object when it sees the sun, for example, is not the sun, but something that is intimately joined to our soul, and this is what I call an *idea*. Thus, by the word *idea*, I mean here nothing other than the immediate object, or the object closest to the mind, when it perceives something, i.e., that which affects and modifies the mind with the perception it has of an object.

It should be carefully noted that for the mind to perceive an object, it is absolutely necessary for the idea of that object to be actually present to it—and about this there can be no doubt; but there need not be any external thing like that idea. For it often happens that we perceive things that do not exist, and that even have never existed—thus our mind often has real ideas of things that have never existed. When, for example, a man imagines a golden mountain, it is absolutely necessary that the idea of this mountain really be present to his mind. When a madman or someone asleep or in a high fever sees some animal before his eyes, it is certain that what he sees is not nothing, and that therefore the idea of this animal really does exist, though the golden mountain and the animal have never existed.

Yet given that men are naturally led, as it were, to believe that only corporeal objects exist, they judge of the reality and existence of things other than as they should. For as soon as they perceive an object, they would have it as quite certain that it exists, although it often happens that there is nothing external. In addition, they would have the object be exactly as they see it, which never happens. But as for the idea that necessarily exists, and that cannot be other than as it is seen, they ordinarily judge unreflectingly that it is nothing—as if ideas did not have a great number of properties, as if the idea of a square, for example, were not different from that of a circle or a number, and did not represent completely different things, which can never be the case for nonbeing, since nonbeing has no properties. It is therefore indubitable that ideas have a very real existence. But now let us examine their nature and essence, and let us see what there can be in the soul that might represent all things to it.

Everything the soul perceives belongs to either one of two sorts: either it is in the soul, or outside the soul. The things that are in the soul are its own thoughts, i.e., all its various modifications—for by the words *thought, mode of thinking,* or *modification of the soul,* I generally understand all those things that cannot be in the soul without the soul being aware of them through the inner sensation it has of itself—such as its sensations, imaginings, pure intellections, or simply conceptions, as well as its passions and natural inclinations. Now, our soul has no need of ideas in order to perceive these things in the way it does, because these things are in the soul, or rather because they are but the soul itself existing in this or that way—just as the actual roundness and motion of a body are but that body shaped and moved in this or that way.

But as for things outside the soul, we can perceive them only by means of ideas, given that these things cannot be intimately joined to the soul. Of these, there are two sorts: spiritual and material. As for the spiritual, there is reason to believe they can be revealed to the soul by themselves and without ideas. For although experience teaches us that we cannot communicate our thoughts to one another immediately and by ourselves, but only through speech or some other sensible sign to which we have attached our ideas, still it might be said that God has established this state of affairs only for the duration of this life in order to prevent the disorder that would now prevail if men could communicate as they pleased. But when order and justice reign, and we are delivered from the captivity of our body, we shall perhaps be able to communicate through the intimate union among ourselves, as the angels seem to be able to do in heaven. Accordingly, it does not seem to be absolutely necessary to have ideas in order to represent spiritual things to the soul, because they might be seen through themselves, though in imperfect fashion.

I shall not inquire[a] *here how two minds can be united, or whether they can in this way reveal their thoughts to each other. I believe, however, that the only purely intelligible substance is God's, that nothing can be revealed with clarity except in the light of this substance, and that a union of minds cannot make them visible to each other. For although we may be closely joined together, we are and shall be unintelligible to each other until we see each other in God, and until He presents us with the perfectly intelligible idea He has of our being contained in His being. Thus, although I may seem to allow that angels can by themselves show to each other both what they are and what they are thinking (which I really do not believe), I warn that it is only because I have no desire to dispute the*

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[a] This paragraph is italicized because you may omit it as being too difficult to understand unless you know my views about the soul and the nature of ideas.

point—provided that you grant me what cannot be disputed, to wit, that you cannot see material things by themselves and without ideas.
In the seventh chapter I shall explain my view on how we know minds, and I shall show that for the moment we cannot know them entirely by themselves, although they might be capable of union with us. But here I am speaking mainly about material things, which certainly cannot be joined to our soul in the way necessary for it to perceive them, because with them extended and the soul unextended, there is no relation between them. Besides which, our souls do not leave the body to measure the heavens, and as a result, they can see bodies outside only through the ideas representing them. In this everyone must agree.

II. A classification of all the ways external objects can be seen.

We assert the absolute necessity, then, of the following: either (a) the ideas we have of bodies and of all other objects we do not perceive by themselves come from these bodies or objects; or (b) our soul has the power of producing these ideas; or (c) God has produced them in us while creating the soul or produces them every time we think about a given object; or (d) the soul has in itself all the perfections it sees in bodies; or else (e) the soul is joined to a completely perfect being that contains all intelligible perfections, or all the ideas of created beings.

We can know objects in only one of these ways. Let us examine, without prejudice, and without fear of the difficulty of the question, which is the likeliest way. Perhaps we can resolve the question with some clarity though we do not pretend to give demonstrations that will seem incontrovertible to everyone; rather, we merely give proofs that will seem very persuasive to those who consider them carefully, for one would appear presumptuous were one to speak otherwise.

BOOK THREE: PART TWO
Chapter Two

That material objects do not transmit species resembling them.

The most commonly held opinion is that of the Peripatetics, who hold that external objects transmit species that resemble them, and that these species are carried to the common sense by the external senses. They call these species *impressed*, because objects impress them on the external senses. These impressed species, being material and sensible, are made intelligible by the *agent*, or *active intellect*, and can then be received in the *passive intellect*. These species, thus spiritualized, are called *expressed* species, because they are expressed from the impressed species, and through them the *passive intellect* knows material things.

We shall not pause here to further investigate these lovely things and the different ways different philosophers conceive of them. For although they disagree about the number of faculties they attribute to the interior sense and to the understanding, and although there are many of them who doubt whether an *agent intellect* is needed in order to know sensible objects, still they practically all agree that external objects transmit species or images that resemble them, and with only this as their basis, they multiply their faculties and defend their *agent intellect*. As this basis has no solidity, as will be shown, it is not necessary to pause further in order to overthrow everything that has been built upon it.

We assert, then, that it is unlikely that objects transmit images, or species, that resemble them, and here are some reasons why. The first is drawn from the impenetrability of bodies. All objects (such as the sun, the stars, as well as those closer to our eyes) are unable to transmit species of a nature other than their own. This is why philosophers commonly say that these species are gross and material as opposed to the expressed species, which are spiritualized. These impressed species are therefore little bodies. They therefore cannot penetrate each other or the whole of the space between the earth and the heavens, which must be full of them. From this it is easy to conclude that they must run against and batter each other from all directions, and that hence they cannot make objects visible.

Furthermore, a great number of objects located in the sky and on earth can be seen from the same place or the same point; the species of all these objects would then have to be capable of being reduced to a point. Now since they are extended they are impenetrable; therefore, . . . and so on.

But not only can a great number of very large objects be seen from the same point; there is no point in the universe's vast stretches from which an almost infinite number of objects cannot be discovered, and even objects as large as the sun, moon, and heavens. In the entire world there is no point[a] where the species of all these things ought not meet—which is contrary to all indications of the truth.

The second reason is based on the change that occurs in the species. It is certain that the closer an object is, the larger its species must be, since we see the object as larger. Now, I do not see what can make this species diminish or what can become of the parts composing it when it was larger. But what is even harder to understand on their view is how, if we look at this object with magnifying glasses or a microscope, the species suddenly becomes five or six hundred times larger than it was before, for still less do we see with what parts it can so greatly increase its size in an instant.

The third reason is that when we look at a perfect cube, all the species of its sides are unequal, and yet we see all its sides as equally square. And likewise when we look at a picture of ovals and parallelograms, which can transmit only species of the same shape, we see in it only circles and squares. This clearly shows that the object we are looking at need not produce species that resemble it in order for us to see it.

Finally, it is inconceivable how a body that does not sensibly diminish could continually emit species in all directions, or how it could continually fill the vast spaces around it with them—and all this with inconceivable speed. For a hidden object can be seen at the very moment of its discovery from several million leagues away and from every direction. And, what seems stranger still, very active bodies, such as air and a few others, lack the force to emit images resembling them—as coarser and less active bodies, such as earth, stones, and almost all hard bodies do.

But I do not wish to linger to adduce all the reasons opposed to this view, since it would be an endless task and the least mental effort will yield an inexhaustible number of them. Those we have just given are enough, and even they are not necessary after what was said about this subject in the first book, where the errors of the senses were explained. But so many philosophers hold this view that I thought it necessary to say something about it in order to provoke them to reflect on their thoughts.

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[a] To see how the impressions of visible objects, however opposed, can be communicated without being diminished, read the last two Eludications found at the end of this work.

BOOK THREE: PART TWO
Chapter Three

That the soul does not have the power to produce ideas. The cause of our error in this matter.

The second view belongs to those who believe that our souls have the power of producing the ideas of the things they wish to think about, and that our souls are moved to produce them by the impressions that objects make on the body, though these impressions are not images resembling the objects causing them. According to them, it is in this that man is made after the image of God and shares in His power. Further, just as God created all things from nothing, and can annihilate them and create new things in their place, so man can create and annihilate ideas of anything he pleases. But there is good reason to distrust all these views that elevate man. These are generally thoughts that come from his pride and vanity, and not from the Father of lights.

This share in God's power that men boast of for representing objects to themselves and for several other particular actions is a share that seems to involve a certain independence (as it is generally explained). But it is also an illusory share, which men's ignorance and vanity makes them imagine. Their dependence upon the power and goodness of God is much greater than they think, but this is not the place to explain the matter. Let us try only to show that men do not have the power to form ideas of the things they perceive.

Since ideas have real properties, no one can doubt that they are real beings, or that they differ from one another, and that they represent altogether different things. Nor can it be reasonably doubted that they are spiritual and are very different from the bodies they represent. This seems to raise a doubt whether the ideas by means of which bodies are seen are not more noble than the bodies themselves. Indeed, the intelligible world must be more perfect than the material, terrestrial world, as we shall see in what follows. Thus, when it is claimed that men have the power to form such ideas as please them, one runs the risk of claiming that men have the power of creating beings worthier and more perfect than the world God has created. Yet this is never thought about, because an idea is fancied to be nothing since it cannot be sensed—or if it is considered as a being, it is only as a meager and insignificant being, because it is thought to be annihilated as soon as it is no longer present to the mind.

But even if it were true that ideas were only lesser and insignificant beings, still they are beings, and spiritual beings at that, and given that men do not have the power of creation, it follows that they are unable to produce them. For the production of ideas in the way they explain it is a true creation, and although they may try to palliate the temerity and soften the harshness of this view by saying that the production of ideas presupposes something whereas creation presupposes nothing, still they have not resolved the fundamental difficulty.

For it ought to be carefully noted that it is no more difficult to produce something from nothing than to produce it by positing another thing from which it cannot be made and which can contribute nothing to its production. For example, it is no more difficult to create an angel than to produce it from a stone, because given that a stone is of a totally contrary kind of being, it can contribute nothing to the production of an angel. But it can contribute to the production of bread, of gold, and such, because stone, gold, and bread are but the same extension differently configured, and they are all material things.

It is even more difficult to produce an angel from a stone than to produce it from nothing, because to make an angel from a stone (insofar as it can be done), the stone must first be annihilated and then the angel must be created, whereas simply creating an angel does not require anything to be annihilated. If, then, the mind produces its own ideas from the material impressions the brain receives from objects, it continuously does the same thing, or something as difficult, or even more difficult, as if it created them. Since ideas are spiritual, they cannot be produced from material images in the brain, with which they are incommensurable.

But if it be said that an idea is not a substance, I would agree—but it is still a spiritual thing, and as it is impossible to make a square out of a mind, though a square is not a substance, so a spiritual idea cannot be formed from a material substance, even though an idea is not a substance.

But even if the mind of man were granted a sovereign power of annihilating and creating the ideas of things, still it would never use it to produce them. For just as a painter, no matter how good he is at his art, cannot represent an animal he has never seen and of which he has no idea—so that the painting he would be required to produce could not be like this unknown animal—so a man could not form the idea of an object unless he knew it beforehand, i.e., unless he already had the idea of it, which idea does not depend on his will. But if he already has an idea of it, he knows the object, and it is useless for him to form another idea of it. It is therefore useless to attribute to the mind of man the power of producing its ideas.

It might be said that the mind has general and confused ideas that it does not produce, and that those of its own making are clearer, more distinct, particular ideas. But this amounts to the same thing. For just as an artist cannot draw the portrait of an individual in such fashion that he could be certain of having done a proper job unless he had a distinct idea of the individual, and indeed unless the subject were to sit for it—so a mind that, for example, has only the idea of being or of animal in general cannot represent a horse to itself, or form a very distinct idea of it, or be sure that the idea exactly resembles a horse, unless it already has an initial idea against which it compares the second. Now if it already has one idea, it is useless to form a second, and therefore the question about the first idea, . . . , and so on.

It is true that when we conceive of a square through pure intellection, we can still imagine it, i.e., perceive it by tracing an image of it for ourselves in the brain. But it should be noted, first, that we are neither the true nor the principal cause of the image (but this is too long a matter to be explained here), and second, that far from being more distinct and more accurate than the first idea, the second idea accompanying the image is accurate only because it resembles the first, which serves as a model [*regle*] for the second. For ultimately, the imagination and the senses themselves should not be taken as representing objects to us more distinctly than does the pure understanding, but only as affecting and moving the mind more. For the ideas of the senses and of the imagination are distinct only to the extent that they conform to the ideas of pure intellection.[a] The image of a square that the imagination traces in the brain, for example, is accurate and well formed only to the extent that it conforms to the idea of a square we conceive through pure intellection. It is this idea that governs the image. It is the mind that conducts the imagination and requires it, as it were, to consider occasionally whether the image it depicts is a figure composed of four straight and equal lines, and exactly right-angled—in a word, whether what one is imagining is like what one conceives.

After what has been said, I do not think anyone can doubt that those who claim the mind can form its own ideas of objects are mistaken, since they attribute to the mind the power of creating, and even of creating wisely and with order, although it has no knowledge of what it does—which is inconceivable. But the cause of their error is that men never fail to judge that a thing is the cause of a given effect when the two are conjoined, given that the true cause of the effect is unknown to them. This is why everyone concludes that a moving ball which strikes another is the true and principal cause of the motion it communicates to the other, and that the soul's will is the true and principal cause of movement in the arms, and other such prejudices—because it always happens that a ball moves when struck by another, that our arms move almost every time we want them to, and that we do not sensibly perceive what else could be the cause of these movements.

But when an effect does not so frequently follow something not its cause, there are still people who believe it to be caused by that thing, though not everyone falls into this error. For example, a comet appears and a prince dies, stones are exposed to the moon and are eaten by worms, the sun is in conjunction with Mars at the birth of a child and something extraordinary happens to the child. This is enough to convince many people that the comet, the moon, and the conjunction of the sun and Mars are the causes of the effects just noted and others like them; and the reason why not everyone is of the same belief is that these effects are not always observed to follow these things.

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[a] "Tanto meliora esse judico quae oculis cerno, quanto pro sui natura viciniora sunt iis quae animo intelligo." Aug. *Vera religione*, ch. 3. "Quis bene se inspiciens non expertus est, tanto se aliquid intellexisse sincerius, quanto removere atque subducere intentionem mentis a corporis sensibus potuit." Aug. *De immortalite animae*, ch. 10.

But given that all men generally have ideas of things present to the mind as soon as they want them, and that this occurs many times daily, practically everyone concludes that the will attending the production, or rather, the presence of ideas is their true cause, because at the time they see nothing they can assign as their cause, and because they believe that ideas cease to exist as soon as the mind ceases to perceive them and begin to exist again when they are represented to the mind. This is also why some people judge that external objects transmit images resembling them, as we have just pointed out in the preceeding chapter. Unable to see objects by themselves, but only through their ideas, they judge that the object produces the idea—because as soon as it is present, they see it; as soon as it is absent, they no longer see it; and because the presence of the object almost always attends the idea representing it to us.

Yet if men were not so rash in their judgments, they would conclude from the fact that the ideas of things are present to their mind as soon as they wish, only this, that in the order of nature their will is generally necessary for them to have these ideas, but not that the will is the true and principal cause that presents ideas to their mind, and still less that the will produces them from nothing or in the way they explain it. They should conclude not that objects transmit species resembling them because the soul ordinarily perceives them only when they are present, but only that the object is ordinarily necessary for the idea to be present to the mind. Finally, because a ball does not have the power to move itself, they should not judge that a ball in motion is the true and principal cause of the movement of the ball it finds in its path. They can judge only that the collision of the two balls is the occasion for the Author of all motion in matter to carry out the decree of His will, which is the universal cause of all things. He does so by communicating to the second ball part of the motion of the first, i.e., to speak more clearly, by willing that the latter ball should acquire as much motion in the same direction as the former loses, for[a] the motor force of bodies can only be the will of Him who preserves them, as we shall show elsewhere.

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[a] See chapter 3 of the second part on Method, and the Elucidation of this chapter [15].

BOOK THREE: PART TWO
Chapter Four

That we do not perceive objects by means of ideas created with us. That God does not produce ideas in us each time we need them.

The third view is held by those who would have it that all ideas are innate or created with us.

To see the implausibility of this view, it should be considered that there are in the world many totally different things of which we have ideas. But to mention only simple figures, it is certain that their number is infinite, and even if we fix upon only one, such as the ellipse, the mind undoubtedly conceives of an infinite number of different kinds of them when it conceives that one of its diameters may be infinitely lengthened while the other remains constant.

Likewise, an infinite number of different kinds of triangles can be conceived, given that the altitude can be infinitely increased or decreased while the base remains the same; moreover, and this is what I ask be noted here, the mind to some extent perceives this infinite number of triangles, although we can imagine very few of them and cannot simultaneously have particular and distinct ideas of many triangles of different kinds. But it should be especially noted that the mind's general idea of this infinite number of different kinds of triangles suffices to prove that if we do not conceive of all these different triangles by means of particular ideas, in short, if we do not comprehend the infinite, the fault does not lie with our ideas, and that our failure to grasp the infinite is only for lack of capacity and scope of mind. If a man were to apply himself to an investigation of the properties of all the different kinds of triangles, and even if he should continue his investigation forever, he would never want for further particular ideas. But his mind would exhaust itself for no purpose.

What I have just said about triangles is applicable to figures of five, six, a hundred, a thousand, of ten thousand sides, and so on to infinity. And if the sides of a triangle can have infinite relations with each other, making an infinity of different kinds of triangles, it is easy to see that figures of four, five, or a million sides can have even greater differences, since they can have a greater number of relations and combinations of their sides than can simple triangles.

The mind, then, perceives all these things; it has ideas of them; it is certain that it will never want for ideas should it spend countless centuries investigating even a single figure, and that if it does not perceive these figures in an instant, or if it does not comprehend the infinite, this is only because of its very limited scope. It has, then, an infinite number of ideas—what am I saying?—it has as many infinite numbers of ideas as there are different figures; consequently, since there is an infinite number of different figures, the mind must have an infinity of infinite numbers of ideas just to know the figures.

Now, I ask whether it is likely that God created so many things along with the mind of man. My own view is that such is not the case, especially since all this could be done in another, much simpler and easier way, as we shall see shortly. For as God always acts in the simplest ways, it does not seem reasonable to explain how we know objects by assuming the creation of an infinity of beings, since the difficulty can be resolved in an easier and more straightforward fashion.

But even if the mind had a store of all the ideas necessary for it to perceive objects, yet it would be impossible to explain how the soul could choose them to represent them to itself, how, for example, the soul could make itself instantly perceive all the different objects whose size, figure, distance and motion it discovers when it opens its eyes in the countryside. Through this means it could not even perceive a single object such as the sun when it is before the body's eyes. For, since the image the sun imprints in the brain does not resemble the idea we have of it (as we have proved elsewhere), and as the soul does not perceive the motion the sun produces in the brain and in the fundus of the eyes, it is inconceivable that it should be able to determine precisely which among the infinite number of its ideas it would have to represent to itself in order to imagine or see the sun and to see it as having a given size. It cannot be said, then, that ideas of things are created with us, or that this suffices for us to see the objects surrounding us.

Nor can it be said that God constantly produces as many new ideas as there are different things we perceive. This view is refuted well enough by what has just been said in this chapter. Furthermore, we must at all times actually have in us the ideas of all things, since we can at all times will to think about anything—which we could not do unless we had already perceived them confusedly, i.e., unless an infinite number of ideas were present to the mind; for after all, one cannot will to think about objects of which one has no idea. Furthermore, it is clear that the idea, or immediate object of our mind, when we think about limitless space, or a circle in general, or indeterminate being, is nothing created. For no created reality can be either infinite or even general, as is what we perceive in these cases. But all this will be seen more clearly in what follows.

BOOK THREE: PART TWO
Chapter Five

That the mind sees neither the essence nor the existence of objects by considering its own perfections. That only God sees them in this way.

The fourth view is that the mind needs only itself in order to see objects, and that by considering itself and its own perfections, it can discover all external things.

It is certain that the soul sees in itself, and without ideas, all the sensations and passions that affect it at the moment—pleasure, pain, cold, heat, colors, sounds, odors, tastes, its love and hatred, its joy and sadness, and all the rest—because none of the soul's sensations and passions represent anything resembling them outside the soul, and are but modifications of which a mind is capable.[a] But the difficulty lies in knowing whether the ideas representing something outside the soul and resembling them to some extent (such as the ideas of the sun, of a house, a horse, a river, etc.) are merely modifications of the soul, as a result of which the mind would need only itself in order to represent all things external to itself.

There are some people who do not hesitate to affirm that with the soul made for thinking, it has within itself all that it needs to perceive objects, i.e., by considering its own perfections, because given that the soul is indeed more noble than anything it distinctly conceives of, it can to some extent be said to contain them *eminently*, as the School would put it, i.e., in a way more noble and sublime than they are in themselves. They would have it that higher things contain the perfections of lower things in this way. Thus, given that they are the noblest creature they know of, these people claim to have within themselves in a spiritual way all that exists in the visible world, and to be able to modify themselves in such fashion as to perceive all that the human mind is capable of knowing. In a word, they would have the soul be like an intelligible world, which contains in itself all that the material and sensible world contains, and indeed, infinitely more.

But it seems to me rash to wish to maintain this view. Unless I am mistaken, it is natural vanity, love of independence, and the desire to be like Him who contains in Himself all beings that confound the mind and lead us to fancy that

[a] See Arnauld's *Dex vrayes et des fausses idées* [ch. 27].

we possess what in fact we do not. "Say not that you are a light unto yourself," says Saint Augustine,[a] for only God is a light unto Himself and can see all that He has produced and might produce by considering Himself.

It cannot be doubted that only God existed before the world was created and that He could not have produced it without knowledge or ideas; consequently, the ideas He had of the world are not different from Himself, so that all creatures, even the most material and terrestrial, are in God, though in a completely spiritual way that is incomprehensible to us.[b] God therefore sees within Himself all beings by considering His own perfections, which represent them to Him. He also knows their existence perfectly, because given that they depend for their existence on His will, and given that He cannot be ignorant of his own volitions, it follows that He cannot be ignorant of their existence, and consequently, God sees in Himself not only the essence of things but also their existence.

But such is not the case with created minds, which can see in themselves neither the essence nor the existence of things. They cannot see the essence of things within themselves since, given their own limitations, created minds cannot contain all beings as does God, who might be termed universal being, or simply, *He Who is*,[c] as He calls Himself. Therefore, since the human mind can know all beings, including infinite beings, and since it does not contain them, we have a sure proof that it does not see their essence in itself. For the mind not only sees things one after another in temporal succession, but it also perceives the infinite, though it does not comprehend it, as we have said in the preceding chapter. Consequently, being neither actually infinite nor capable of infinite modifications simultaneously, it is absolutely impossible for the mind to see in itself what is not there. It does not see the essence of things, therefore, by considering its own perfections or by modifying itself in different ways.

Nor does it see their existence in itself, because they do not depend for their existence upon its will, and because the ideas of things can be present to the mind though the things themselves might not exist. For everyone can have the idea of a golden mountain without there being a golden mountain in nature, and although one may rely on the reports of the senses to judge the existence of objects, nevertheless reason does not assure us that we should always believe our senses, since we clearly detect that they deceive us. When a man's blood is heated, for example, or simply when he is asleep, he sometimes sees country scenes, battles, and other such things before his eyes that are not present nor perhaps ever were. Undoubtedly, then, it is not in itself or through itself that the mind sees the existence of things, but rather it depends on something else for this.

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[a] See the *Réponse aux vrayes & aux fausses idées,* & the *Réponse à une 3e Lettre de M. Arnauld,* in the fourth volume of my *Replies*. "Dic quia tu tibi lumen non es." Serm. 8, *De verbis Domini*.

[b] "Cum essentia Dei habeat in se quidquid perfectionis habet essentia cujusque rei alterius, & adhuc amplius, Deus in se ipso potest omnia propria cognitione cognoscere. Propria enim natura cujusque consistit, secundum quod per aliquem modum naturam Dei participat." St. Thomas, I. P. q. 14. art. 6.

[c] Exod. 3:14.

BOOK THREE: PART TWO
Chapter Six

That we see all things in God.

In the preceding chapters we have examined four different ways in which the soul might see external objects, all of which seem to us very unlikely. There remains only the fifth, which alone seems to conform to reason and to be most appropriate for exhibiting the dependence that minds have on God in all their thoughts.

To understand this fifth way, we must remember what was just said in the preceding chapter—that God must have within Himself the ideas of all the beings He has created (since otherwise He could not have created them), and thus He sees all these beings by considering the perfections He contains to which they are related. We should know, furthermore, that through His presence God is in close union with our minds, such that He might be said to be the place of minds as space is, in a sense, the place of bodies. Given these two things, the mind surely can see what in God represents created beings, since what in God represents created beings is very spiritual, intelligible, and present to the mind. Thus, the mind can see God's works in Him, provided that God wills to reveal to it what in Him represents them. The following are the reasons that seem to prove that He wills this rather than the creation of an infinite number of ideas in each mind.

Not only does it strictly conform to reason, but it is also apparent from the economy found throughout nature that God never does in very complicated fashion what can be done in a very simple and straightforward way. For God never does anything uselessly and without reason. His power and wisdom are not shown by doing lesser things with greater means—this is contrary to reason and indicates a limited intelligence. Rather, they are shown by doing greater things with very simple and straightforward means. Thus, it was with extension alone that He produced everything admirable we see in nature and even what gives life and movement to animals. For those who absolutely insist on substantial forms, faculties, and souls in animals (different from their blood and bodily organs) to perform their functions, at the same time would have it that God lacks intelligence, or that He cannot make all these remarkable things with extension alone.They measure the power and sovereign wisdom of God by the pettiness of their own mind. Thus, since God can reveal everything to minds simply by willing that they see what is in their midst, i.e., what in Him is related to and represents these things, there is no likelihood that He does otherwise, or that He does so by producing as many infinities of infinite numbers of ideas as there are created minds.

But it should be carefully noted that we cannot conclude from their seeing all things in God in this way that our minds see the essence of God. God's essence is His own absolute being, and minds do not see the divine substance taken absolutely but only as relative to creatures and to the degree that they can participate in it. What they see in God is very imperfect, whereas God is most perfect. They see matter that is shaped, divisible, and so on, but there is nothing divisible or shaped in God, for God is all being, since He is infinite and comprehends everything; but He is no being in particular. Yet what we see is but one or more particular beings, and we do not understand this perfect simplicity of God, which includes all beings. In addition, it might be said that we do not so much see the ideas of things as the things themselves that are represented by ideas, for when we see a square, for example, we do not say that we see the idea of the square, which is joined to the mind, but only the square that is external to it.

The second reason for thinking that we see beings because God wills that what in Him representing them should be revealed to us (and not because there are as many ideas created with us as there are things we can perceive) is that this view places created minds in a position of complete dependence on God—the most complete there can be. For on this view, not only could we see nothing but what He wills that we see, but we could see nothing but what He makes us see. ''Non sumus sufficientes cogitare aliquid a nobis, tamquam ex nobis, sed sufficientia nostra ex Deo est.''[a] It is God Himself who enlightens philosophers in the knowledge that ungrateful men call natural though they receive it only from heaven. ''Deus enim illis manifestavit.''[b] He is truly the mind's light and the father of lights. ''Pater luminum''[c]—it is He who teaches men knowledge—''Qui docet hominem scientiam.''[d] In a word, He is the true light that illumines everyone who comes into the world: ''Lux vera quae illuminat omnem hominem venientem in hunc mundum.''[e]

For after all, it is difficult enough to understand distinctly the dependence our minds have on God in all their particular actions, given that they have everything we distinctly know to be necessary for them to act, or all the ideas of things present to their mind. And that general and confused term *concourse*, by means of which we would explain creatures' dependence on God, rouses not a single distinct idea in an attentive mind; and yet it is good that men should distinctly know that they are capable of nothing without God.

[a] 2 Cor. 3:5.
[b] Rom. 1:19.
[c] James 1:17.
[d] Ps. 93:10.
[e] John 1:9.

But the strongest argument of all is the mind's way of perceiving anything. It is certain, and everyone knows this from experience, that when we want to think about some particular thing, we first glance over all beings and then apply ourselves to the consideration of the object we wish to think about. Now, it is indubitable that we could desire to see a particular object only if we had already seen it, though in a general and confused fashion. As a result of this, given that we can desire to see all beings, now one, now another, it is certain that all beings are present to our mind; and it seems that all beings can be present to our mind only because God, i.e., He who includes all things in the simplicity of His being, is present to it.

It even seems that the mind would be incapable of representing universal ideas of genus, species, and so on, to itself had it not seen all beings contained in one. For, given that every creature is a particular being, we cannot say that we see a created thing when, for example, we see a triangle in general. Finally, I think that sense can be made of the way the mind knows certain abstract and general truths only through the presence of Him who can enlighten the mind in an infinity of different ways.

Finally, of the proofs of God's existence, the loftiest and most beautiful, the primary and most solid (or the one that assumes the least)[a] is the idea we have of the infinite. For it is certain that (a) the mind perceives the infinite, though it does not comprehend it, and (b) it has a very distinct idea of God, which it can have only by means of its union with Him, since it is inconceivable that the idea of an infinitely perfect being (which is what we have of God) should be something created.

But not only does the mind have the idea of the infinite, it even has it before that of the finite. For we conceive of infinite being simply because we conceive of being, without thinking whether it is finite or infinite. In order for us to conceive of a finite being, something must necessarily be eliminated from this general notion of being, which consequently must come first. Thus, the mind perceives nothing except in the idea it has of the infinite, and far from this idea being formed from the confused collection of all our ideas of particular beings (as philosophers think), all these particular ideas are in fact but participations in the general idea of the infinite; just as God does not draw. His being from creatures, while every creature is but an imperfect participation in the divine being.

Here is an argument that may prove demonstrative for those accustomed to abstract reasoning. It is certain that ideas are efficacious, since they act upon the mind and enlighten it, and since they make it happy or unhappy through the pleasant or unpleasant perceptions by which they affect it. Now nothing can act immediately upon the mind unless it is superior to it—nothing but God alone; for only the Author of our being can change its modifications. All our ideas, therefore, must be located in the efficacious substance of the Divinity, which alone is intelligible or capable of enlightening us, because it alone can affect intelligences. "Insinuavit nobis Christus," says Saint Augustine,[b] "animam humanam & mentem rationalem non vegetari, non beatificari, NON ILLUMINARI NISI AB IPSA SUBSTANTIA DEI."

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[a] This proof will be found treated at greater length in chapter 11 of the following book.

[b] *Tract.* 23 on St. John.

Finally, God can have no other special end for His actions than Himself. This is a notion common to all men capable of a little reflection, and Sacred Scripture allows no doubt that God made all things for Himself. Therefore, not only must our natural love, i.e., the impulse He produces in our mind, tend toward Him but also the knowledge and light He gives it must reveal to us something in Him, for everything coming from God can be only for God. If God had made a mind and had given the sun to it as an idea, or immediate object of knowledge, it seems to me God would have made this mind and its idea for the sun and not for Himself.

God can make a mind in order for it to know His works, then, only if that mind to some extent sees God in seeing His works. As a result, it might be said that if we do not to some extent see God, we see nothing, just as if we do not love God, i.e., if God were not continuously impressing upon us the love of good in general, we would love nothing.[a] For, given that this love is our will, we could neither love nor will anything without it, since we can love particular goods only by directing toward these goods the impulse of love that God gives us for Himself. Thus, as we love something only through our necessary love for God, we see something only through our natural knowledge of God; and all our particular ideas of creatures are but limitations of the idea of the Creator, as all the impulses of the will toward creatures are only determinations of its impulse toward the Creator.

I do not think there are any theologians who will disagree that the impious love God with this natural love I am speaking about, and Saint Augustine and several other Fathers maintain as indubitable that the impious see eternal truths and moral rules in God. Accordingly, the view I am expounding should upset no one.[b] Here is how Saint Augustine expresses it:

> Ab illa incommutabilis luce veritatis etiam impius, dam ab ea avertitur, quodammodo tangitur. Hinc est quod etiam impii cogitant aeternitatem, & multa recte reprehendunt, recteque laudant in hominum moribus. Quibus ea tandem regulis judicant, nisi in quibus vident, quemadmodum quisque vivere debeat, etiam si nec ipsi eodem modo vivant? Ubi autem eas vident? Neque enim in sua natura. Nam cum procul dubio mente ista videantur, eorumque mentes constet esse mutabiles, has vero regulas immutabiles videat, quisquis in eis & hoc videre potuerit. . . ubinam ergo sunt istae regulae scriptae, nisi in libro lucis illius, quae veritas dicitur, unde lex omnis justa describitur. . . in qua videt quid operandum sit, etiam qui operatur injustitiam, & ipse est qui ab illa luce avertitur a qua tamen tangitur.[c]

Saint Augustine has an infinity of such passages by which he proves that we already see God in this life through the knowledge we have of eternal truths. The truth is uncreated, immutable, immense, eternal, and above all things. It is true by itself. It draws its perfection from no other thing. It renders creatures more perfect, and all minds naturally seek to know it. Only God can have all these perfections. Therefore, truth is God. We see some of these immutable, eternal truths. Therefore, we see God. These are the arguments of Saint Augustine—ours are somewhat different, and we have no wish to make improper use of the authority of so great a man in order to support our own view.

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[a] Bk. 1, ch. 1.

[b] See the preface to the *Dialogues on Metaphysics*, and the *Réponse aux vrayes & fausses idées* chs. 7 & 21.

[c] Book 14, *De Trin.* ch. 15.

We are of the opinion, then, that truths (and even those that are eternal, such as that twice two is four) are not absolute beings, much less that they are God Himself. For clearly, this truth consists only in the relation of equality between twice two and four. Thus, we do not claim, as does Saint Augustine, that we see God in seeing truths, but in seeing the *ideas* of these truths—for the ideas are real, whereas the equality between the ideas, which is the truth, is nothing real. When we say, for example, that the cloth we are measuring is three ells long, the cloth and the ells are real. But the equality between them is not a real being—it is only a relation found between the three ells and the cloth. When we say that twice two is four, the ideas of the numbers are real, but the equality between them is only a relation. Thus, our view is that we see God when we see eternal truths, and not that these truths are God, because the ideas on which these truths depend are in God—it might even be that this was Saint Augustine's meaning. We further believe that changeable and corruptible things are known in God, though Saint Augustine speaks only of immutable and incorruptible things, because for this to be so, no imperfection need be placed in God, since, as we have already said, it is enough that God should reveal to us what in Him is related to these things.

But although I may say that we see material and sensible things in God, it must be carefully noted that I am not saying we have sensations of them in God, but only that it is God who acts in us; for God surely knows sensible things, but He does not sense them. When we perceive something sensible, two things are found in our perception: *sensation* and pure *idea*. The sensation is a modification of our soul, and it is God who causes it in us. He can cause this modification even though He does not have it Himself, because He sees in the idea He has of our soul that it is capable of it. As for the idea found in conjunction with the sensation, it is in God, and we see it because it pleases God to reveal it to us. God joins the sensation to the idea when objects are present so that we may believe them to be present and that we may have all the feelings and passions that we should have in relation to them.

We believe, finally, that all minds see eternal laws, as well as other things, in God, but with a certain difference. They know order and eternal truths, and even the beings that God has made according to these truths or according to order, through the union these minds necessarily have with the Word, or the wisdom of God, which enlightens them, as has just been explained. But it is through the impression they constantly receive from the will of God, who leads them toward Him and who tries, as it were, to make their will entirely like His own, that they realize that the immutable order is their own indispensable law, an order which thus includes all eternal laws, such as that we ought to love good and avoid evil, that justice should be prized more than all riches, that it is better to obey God than to command men, and an infinity of other natural laws. For the knowledge of all these laws, or of the obligation minds are under to conform to the immutable order, is not different from the knowledge of this impression, which they always feel in themselves, though they do not always follow it through the free choice of their will, and which they know to be common to all minds, though it is not equally strong in all minds.

It is through this dependence, this relation, this union of our mind with the Word of God, and of our will with His love, that we are made in the image and likeness of God. And though this image may be greatly effaced through sin, yet it must subsist as long as we do. But if we bear the image of the Word humiliated upon earth, and if we follow the impulses of the Holy Ghost, this union of our mind with the Word of the Father, and with the love of the Father and the Son, will be reestablished and made indelible. We shall be like God if we are like the God-man. Finally, God will be entirely in us, and we in Him in a way much more perfect than that by which we must be in Him and He in us that we might subsist.

These are some of the reasons that might lead one to believe that minds perceive everything through the intimate presence of Him who comprehends all in the simplicity of His being. Each of us will judge[a] the matter according to the inner conviction he receives after seriously considering it. But I do not think there is any plausibility in any of the other ways of explaining these things, and this last way seems more than plausible. Thus, our souls depend on God in all ways. For just as it is He who makes them feel pain, pleasure, and all the other sensations, through the natural union He has established between them and our bodies, which is but His decree and general will, so it is He who makes them know all that they know through the natural union He has also established between the will of man and the representation of ideas contained in the immensity of the Divine being, which union is also but His general will. As a result of this, only He can enlighten us, by representing everything to us—just as only He can make us happy by making us enjoy all sorts of pleasures.

Let us hold this view, then, that God is the intelligible world or the place of minds, as the material world is the place of bodies; that from His power minds receive their modifications; that in His wisdom they find all their ideas; that through His love they receive their orderly impulses, and because His power and love are but Himself, let us believe with Saint Paul, that He is not far from any of us, and that in Him we live and move and have our being. "Non longe est ab unoquoque nostrum, in ipso enim vivimus, movemus, & sumus."[b]

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[a] See the *Elucidations* [4]. The *Réponse au livre des vrayes & fausses Idées*. The *1ère Lettre contre la Défense* against this *Réponse;* the first two *Dialogues on Metaphysics*. The *Réponse à M. Régis*, and especially my *Réponse à une 3e Lettre de M. Arnauld*. There perhaps my view will be found more clearly demonstrated.

[b] Acts 17:28.

BOOK THREE: PART TWO
Chapter Seven

I. The four different ways of perceiving things. II. How we know God. III. How we know bodies. IV. How we know our own souls. V. How we know pure spirits and the souls of other men.

In order to clarify and simplify the view I have just laid out concerning the way in which the mind perceives all the various objects of its knowledge, I must distinguish its four ways of knowing.

I. The four ways of perceiving things.

The first is to know things by themselves.

The second is to know them through their ideas, i.e., as I mean it here, through something different from themselves.

The third is to know them through *consciousness*, or inner sensation.

The fourth is to know them through conjecture.

We know things by themselves and without ideas when they are intelligible by themselves, i.e., when they can act on the mind and thereby reveal themselves to it. For the understanding is a purely passive faculty of the soul, whereas activity is found only in the will. Even its desires are not the true causes of ideas—they are but the occasional or natural causes of their presence as a result of the natural laws concerning the union of our soul with universal Reason, as I have explained elsewhere. We know things through their ideas when they are not intelligible by themselves, whether because they are corporeal or because they cannot affect the mind or reveal themselves to it. Through consciousness we know everything that is not distinct from ourselves. Finally, through conjecture we know those things that are different both from ourselves and from what we know either in itself or through ideas, such as when we believe that certain things are like certain others we know.

II. How we know God.

Only God do we know through Himself, for though there are other spiritual beings besides Him, which seem intelligible by their nature, only He can act on our mind and reveal Himself to it. Only God do we perceive by a direct and immediate perception. Only He can enlighten our mind with His own substance. Finally, only through the union we have with Him are we capable in this life of knowing what we know, as we have explained in the preceding chapter; for He is the only master, according to Saint Augustine,[a] ruling our mind without the mediation of any creature.

I cannot conceive how a created thing can represent the infinite, how being that is without restriction, immense and universal, can be perceived through an idea, i.e., through a particular being different from universal and infinite being. But as far as particular beings are concerned, there is no difficulty in conceiving how they can be represented by the infinite being that contains them in His most efficacious and, consequently, most intelligible substance. Thus, it must be said that (a) we know God through Himself, though our knowledge of Him in this life is very imperfect, and (b) we know corporeal things through their ideas, i.e., in God, since only God contains the intelligible world, where the ideas of all things are located.

But while we can see all things in God, it does not follow that we in fact do so—we see in God only the things of which we have ideas, and there are things we perceive without ideas, or know only through sensation.

III. How we know bodies.

Everything in this world of which we have some knowledge is either a mind or a body, a property of a mind or a property of a body. Undoubtedly, we know bodies with their properties through their ideas, because given that they are not intelligible by themselves, we can perceive them only in that being which contains them in an intelligible way. Thus, it is in God and through their ideas that we perceive bodies and their properties, and for this reason, the knowledge we have of them is quite perfect—i.e., our idea of extension suffices to inform us of all the properties of which extension is capable, and we could not wish for an idea of extension, figure, or motion more distinct or more fruitful than the one God gives us.

As the ideas of things in God include all their properties, whoever sees their ideas can also see all their properties successively; for when we see things as they are in God, we always see them in perfect fashion, and the way we see them would be infinitely perfect if the mind seeing them were infinite. What is lacking to our knowledge of extension, figures, and motion is the shortcoming not of the idea representing it but of our mind considering it.

IV. How we know our own soul.

Such is not the case with the soul, [which] we do not know through its idea—we do not see it in God; we know it only through *consciousness*, and because of this, our knowledge of it is imperfect. Our knowledge of our soul is limited to what we sense taking place in us. If we had never sensed pain, heat, light, and such, we would be unable to know whether the soul was capable of sensing these things, because we do not know it through its idea. But if we saw in

[a] Humanis mentibus nulla interposita natura praesidet.'' Aug. *De vera relig.* ch. 55.

God the idea corresponding to our soul, we would at the same time know, or at least could know all the properties of which it is capable—as we know, or at least can know, all the properties of which extension is capable, because we know extension through its idea.

It is true that we know well enough through our consciousness, or the inner sensation we have of ourselves, that our soul is something of importance. But what we know of it might be almost nothing compared to what it is in itself. If all we knew about matter were some twenty or thirty figures it had been modified by, we certainly would know almost nothing about it in comparison with what we can know about it through the idea representing it. To know the soul perfectly, then, it is not enough to know only what we know through inner sensation—since the consciousness we have of ourselves perhaps shows us only the least part of our being.

From what we have just said it might be concluded that although we know the existence of our soul more distinctly than the existence of both our own body and those surrounding us, still our knowledge of the soul's nature is not as perfect as our knowledge of the nature of bodies, and this might serve to reconcile the differing views[a] of those who say that nothing is known better than the soul, and those who claim to know nothing less.

This might also serve to prove that the ideas which represent to us things outside us are not modifications of our soul. For if the soul saw all things by considering its own modifications, it would have to know its own nature or essence more clearly than that of bodies, and all the sensations or modifications of which it is capable more clearly than the figures or modifications of which bodies are capable. However, it knows itself capable of a given sensation not through the perception it has of itself in consulting its idea but only through experience, whereas it knows that extension is capable of an infinite number of figures through the idea it has of extension. There are even certain sensations like colors and sounds which are such that most people cannot tell whether or not they are modifications of the soul, but there is no figure that everyone, through the idea he has of extension, does not recognize as the modification of a body.

What I have just said also shows why the modifications of the soul cannot be made known through definition; for since we know neither the soul nor its modifications through ideas but only through sensation, and since such sensations as, for example, pleasure, pain, heat, and so on, are not attached to any words, it is clear that if someone had never seen color or felt heat, he could not be made to know these sensations through any definition of them that might be given him. Now, given that men have their sensations only on account of their body, and given that their bodies are not all disposed in the same way, it often happens that words are equivocal, that the words we use to express the modifications of our soul mean just the opposite of what we intend, and that we often make people think of bitterness, for example, when we believe we are making them think of sweetness.

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[a] See the Elucidations [11].

Although our knowledge of our soul is not complete, what we do know of it through consciousness or inner sensation is enough to demonstrate its immortality, spirituality, freedom, and several other attributes we need to know. And this seems to be why God does not cause us to know the soul, as He causes us to know bodies, through its idea. The knowledge that we have of our soul through consciousness is imperfect, granted; but it is not false. On the other hand, that knowledge we have of bodies through sensation or consciousness, if the confused sensation we have of what takes place in our body can be called consciousness, is not only imperfect, but also false. We therefore needed an idea of the body to correct our sensations of it—but we need no idea of our soul, since our consciousness of it does not involve us in error, and since to avoid being mistaken in our knowledge of it, it is enough not to confuse it with the body—and reason enables us to do this since our idea of the body reveals to us that the modalities of which it is capable are quite different from those we sense. Finally, if we had an idea of the soul as clear as that which we have of the body, that idea would have inclined us too much to view the soul as separated from the body. It would have thus diminished the union between our soul and body by preventing us from regarding it as dispersed through all our members, though I shall not further explain the matter here.

V. How we know other men's souls.

Of all the objects of our knowledge, only the souls of other men and pure intelligences remain; and clearly we know them only through conjecture. At present we do not know them either in themselves or through their ideas, and as they are different from ourselves, we cannot know them through consciousness. We conjecture that the souls of other men are of the same sort as our own. We suppose them to feel what we feel in ourselves, and even when these sensations have no relation to the body, we are certain we are not mistaken because we see in God certain ideas and immutable laws from which we know with certainty that God acts uniformly in all minds.

I know that twice two is four, that it is better to be just than rich, and I am not mistaken in believing that others know these truths as well as I do. I love pleasure and good, I abhor pain and evil, I want to be happy, and I am not mistaken in believing that all men, the angels, and even demons have these same inclinations. I even know that God will never make a mind that does not desire to be happy, or that can desire to be unhappy. But I know this with evidence and certainty because it is God who teaches it to me—for who else but God could reveal to me His designs and volitions? But when the body plays a part in what happens in me, I am almost always mistaken in judging others by myself. I feel heat, I see something of a certain size, a certain color, I taste such and such a flavor upon the approach of certain bodies—but I am mistaken if I judge others by myself. I am subject to certain passions, I have a liking or an aversion for such and such things, and I judge that others are like me—but my conjecture is often false. Thus, the knowledge we have of other men is very liable to error if we judge them only by the sensations we have of ourselves.

If there are beings different from God and ourselves, as well as from bodies and pure spirits, they are unknown to us. I can hardly persuade myself of their existence, and after examining the arguments of certain philosophers holding that there are these things, I have found them unsound. This reinforces our view that since all men have the same nature, we all have the same ideas, because we all need to know the same things.

BOOK THREE: PART TWO

Chapter Eight

I. The intimate presence of the vague idea of being in general is the cause of all of the mind's disordered abstractions, and of most of the chimeras of ordinary philosophy that prevent many philosophers from recognizing the solidity of the true principles of physics. II. An example of this concerning the essence of matter.

The clear, intimate, and necessary presence of God (i.e., the being without individual restriction, the infinite being, being in general) to the mind of man acts upon it with greater force than the presence of all finite objects. The mind cannot entirely rid itself of this general idea of being, because it cannot subsist outside God. Perhaps you will say that the mind can withdraw from this idea because it can think about particular beings; but you would be mistaken. For when the mind considers some being in particular, it moves not so much away from God as nearer Him (if one of His perfections may be spoken of as representative of this being) by moving away from all the others. Yet it moves away from them in such a way that it never loses sight of them, and it is almost always ready to seek them out and move near them. They are always present to the mind, but the mind perceives them only in an unsolvable confusion due to its own pettiness and the greatness of the idea of being. One might well not think about oneself for some time, but it seems to me one cannot subsist a moment without thinking of being, and at the very time that one takes himself to be thinking of nothing, one is necessarily filled with the vague and general idea of being. But because commonplace things that do not affect us do not forcefully arouse the mind and command its attention, this idea of being, however great, real, positive, and vast it may be, is so familiar to us and affects us so little that we almost believe ourselves not to see it, do not reflect on it, and then judge that it has but little reality and is formed only from the confused collection of all our particular ideas, although, quite to the contrary, it is in it and by it alone that we perceive all beings in particular.

Although this idea that we receive through the immediate union we have with the Word of God, sovereign Reason, never deceives us by itself as do those we receive because of the union we have with our bodies, which represent things to us other than as they are, yet I have no hesitation in saying that we make such ill use of the best of things that the ineradicable presence of this idea is one of the main causes of all of the mind's disordered abstractions, and consequently, [it is one of the main causes] of all that abstract and chimerical philosophy that explains all natural effects with the general terms act, potency, causes, effect, substantial forms, faculties, occult qualities, and so on. For it is certain that all these terms and several others arouse in the mind only vague and general ideas, i.e., those ideas that present themselves to the mind with no difficulty or effort on our part, those ideas that are contained in the ineradicable idea of being.

Let a man read as carefully as possible all the definitions and explanations that are given of substantial forms; let him painstakingly search for what the essence of all those entities consists of—those entities that philosophers imagine at will and in such great numbers that they are forced to make divisions and subdivisions of them—and I am certain that no idea of these things other than that of being and of cause in general will ever arise in his mind.

Here is what commonly happens to philosophers. They observe some new effect; immediately they fancy a new entity to produce it. Fire heats things—therefore there is something is fire that produces this effect, something different from the matter of which fire is composed. And because fire is capable of several different effects (such as disintegrating bodies, and reducing them to ashes and earth, drying them, hardening them, softening them, enlarging them, purifying them, as well as providing us with heat and light, and so on), they liberally bestow on fire as many faculties or real qualities as effects it is capable of producing.

But if you think about the definitions they give of these faculties, you will see that they are only logical definitions, and that they arouse no other ideas than that of being or of cause in general, which the mind relates to the effect that is produced—as a result of which, we know no more about them after having studied them a great deal. For all we get from that kind of study is the fancy that we know better than others what in fact we know much less, not only because we admit several entities that have never existed, but also because, being distracted, we make ourselves incapable of conceiving how matter alone, such as that of fire, when moved against differently disposed bodies, can produce in them all the different effects that we see fire produce.

It is clear to anyone who has read a little that practically all books of science, and especially those dealing with physics, medicine, chemistry, and all the other specific areas of nature, are full of arguments based on elementary qualities and on secondary qualities such as *attractives, retentives, concoctives, expulsives,* and other such items, on other qualities they call occult, on specific virtues, and on several other entities men compose from the general idea of being and the idea of the cause of the effect they observe. All of which seems possible only because of their aptitude for considering the idea of being in general, which idea is always present to their mind through the intimate presence of Him who contains all beings.

If these ordinary philosophers contented themselves with offering their physics simply as a logic that might furnish appropriate terms for discussing the things of nature, and if they were tolerant of those who attach distinct and particular ideas to these terms in order to understand them, we would find no complaint in what they do. But they pretend to explain nature through their general and abstract terms—as if nature were abstract; and they would absolutely have it that the physics of their master Aristotle is a true physics, explaining the foundation of things, and not simply a logic, although it contains nothing of worth other than a few definitions so vague and a few terms so general that they can be used in all sorts of philosophies. Finally, they are so obstinate about these imaginary entities and the vague and indeterminate ideas that spring naturally from their mind that they are incapable of pausing long enough to consider the real ideas of things in order to recognize their solidity and clarity. And it is this which is the cause of their extreme ignorance of the true principles of physics. A proof of this must now be given.

II. The essence of matter.

Philosophers agree that we ought to regard as the essence of a thing what we recognize as primary in that thing, what is inseparable from it, and what all the properties belonging to it depend on.[a] Accordingly, in order to discover what the essence of matter consists in, we need to examine all the properties belonging to it, or included in our idea of it—such as hardness, softness, fluidity, motion, rest, figure, divisibility, impenetrability, and extension, and first consider which of all its attributes is inseparable from it. Thus, given that fluidity, hardness, softness, motion, and rest can be separated from matter, since there are many bodies without hardness, or fluidity, or softness, that are not in motion, or not at rest, it clearly follows that all these attributes are not essential to it.

But there remain four others that we conceive of as inseparable from matter, to wit, figure, divisibility, impenetrability, and extension. Accordingly, in order to see which attribute we should take as its essence, we no longer need to try to imagine them as separated, but only to examine which is the primary one presupposing no other. We easily see that figure, divisibility, and impenetrability presuppose extension, and that extension presupposes nothing, but that as soon as extension is given, divisibility, impenetrability, and figure are given. We must thus conclude that extension is the essence of matter, given that matter has only those attributes, or attributes only like those which we have just mentioned, and I do not think there is anyone in the world who, after seriously thinking about it, can doubt that this is so.

But the difficult thing is to know whether matter does not have still other attributes, different from extension and those depending on extension; as a result, extension itself might not be essential to matter, and might presuppose something else that would be its subject and principle.

After having carefully considered their idea of matter through all its known attributes, and after having thought about nature's effects as much as the mind's strength and capacity permit, several people are firmly convinced that extension presupposes nothing at all in matter, whether because they had no distinct particular idea of the thing supposed to precede extension, or because they saw no effect establishing it.

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[a] If this definition of the word essence is accepted, all the rest follows demonstratively; if it is not accepted, then it is only a question of words as to what the essence of matter consists in (or rather, this issue cannot even be discussed).

For just as it is enough to know how the different disposition of its wheels can produce the various motions in a watch, and to have besides this no distinct idea of what could be the cause of this motion, although several of them might be had from logic—as this is enough to convince us that a watch is not something different from the matter of which it is composed, so these people are convinced that extension is the essence of matter because (a) they have no distinct idea of what could be in matter if extension were taken from it; (b) they see no attribute that could make it known; (c) with extension given, all the attributes we conceive of as belonging to matter are given; and (d) matter is the cause of no effect we can conceive of that extension, variously configured and agitated, could not produce.

But just as we do not have a certain demonstration that there is not some intelligence, or some newly created entity in the wheels of a watch, so no one, without a private revelation, can affirm as a geometrical demonstration that there is only variously configured extension in a stone. For it is absolutely possible that extension might be joined to some other thing that, because we have no idea of it, we do not conceive of—although it seems quite unreasonable to believe and assert it, since to assert what one does not know or conceive of is contrary to reason.

Yet if it be supposed that there is something beside extension in matter, there would be nothing, if due caution is taken, to prevent extension from being its essence according to the definition we have just given of this word. For in the final analysis, it is absolutely necessary that everything in the world be either a being or a mode of a being—which no attentive mind can deny. Now, extension is not a mode of a being; therefore it is a being. But since matter, because it is but a single being, is not composed of several beings—as is man, who is composed of body and mind—matter clearly is nothing other than extension.

In order to prove now that extension is not a mode of a being but is truly a being, it should be noted that we cannot conceive a mode of a being unless at the same time we conceive the being of which it is the mode. We cannot conceive of roundness, for example, unless we conceive of extension, because given that a mode of a being is only that being (existing) in a certain way, e.g., the roundness of wax is the wax itself (existing) in a certain way, we clearly cannot conceive the mode without the being. If extension were a mode of being, then, we could not conceive of extension without that being of which extension was the mode. Yet we can quite easily conceive it by itself. Therefore, it is not the mode of any being, and consequently is itself a being. It is thus the essence of matter, since matter is but one being, and is not composed of several beings, as we have just said.

But many philosophers are so accustomed to general ideas and entities of logic that their mind is more occupied with them than with those of physics, which are particular and distinct. This can be seen from the fact that their reasoning about natural things is based only on logical notions, on act, potency, and an infinite number of imaginary entities they do not distinguish from those that are real. Given, then, that these people have a marvelous facility for seeing in their own way whatever they wish, they fancy that their vision is better than others', that they distinctly see that extension presupposes something, and that extension is only a property of matter from which it might even be stripped away.

Yet, if they are asked to explain this thing in addition to extension that they pretend to see in matter, they do so in ways that indicate that they have no other idea of this thing than being or substance in general. That this is the case is clear when we notice that the idea in question contains no particular attribute belonging to matter. For if extension is taken from matter, all the attributes and properties we distinctly conceive as belonging to it are also taken away, even if this thing they imagine to be its essence is left behind; it is clear that neither an earth nor the heavens nor anything we see could be made from it. And, on the contrary, if what they imagine to be the essence of matter is taken away, provided that extension is left behind, all the attributes and properties we distinctly conceive as included in the idea of matter are also left—for with extension alone we can certainly form the heavens, an earth, and the entire world we see as well as an infinity of others. Thus, this something that they suppose in addition to matter,.having no attributes we distinctly conceive as belonging to it, and which are clearly contained in the idea we have of it, is, if we are to believe reason, nothing real and cannot even be used to explain natural effects. And what is said of its being the *subject* and *principle* of extension is said gratuitously and without a clear conception of what is being said, i.e., without there being any idea of it other than a general idea from logic, like principle and subject. As a result, a new *subject* and a new *principle* of this subject of extension could in turn be imagined, and so on to infinity, because the mind represents general ideas of subject and principle to itself as it pleases.

True, it is likely that men would not have so obscured their idea of matter unless they had had several reasons for doing so, and, in fact, many hold views contrary to the above because of theological principles. Undoubtedly, extension is not the essence of matter—if that position is contrary to the faith, and we acknowledge so. Thanks be to God, we are well aware of the weakness and limitation of the human mind. We know that it has far too little scope to measure an infinite power, that God can do infinitely more than we can conceive of, that He gives us ideas only to know things happening according to the order of nature, and that He conceals the rest from us. We are always prepared, then, to subordinate the mind to faith; but proofs other than those usually adduced against the arguments just given are called for, because the ways of explaining the mysteries of the faith are not of the faith, and we believe them even without understanding how they can ever be clearly explained.

We believe the mystery of the Trinity, for example, although the human mind cannot conceive it; and yet we do not give up our belief that two things not differing from a third are not different from each other, although this proposition seems to overthrow it. For I am convinced that the mind should not be employed except on subjects suited to its capacity, and that our mysteries should not be scrutinized lest they benumb us, as warned by the Holy Ghost, "Qui scrutator est majestatis opprimetur a gloria."

Yet if I believed that some people would be satisfied by an explanation of how my position on matter agrees with what faith teaches us about Transubstantiation, I could perhaps give one in clear and distinct enough fashion, and one that would not disagree at all with the Church's decisions; but I think I can be dispensed from doing so, especially in this work.

For it should be noted that the Church Fathers almost always spoke of this mystery as an incomprehensible mystery, that they did not philosophize in an attempt to explain it, that for the most part they contented themselves with rather inexact comparisons more appropriate to making the dogma known than to giving an explanation of it that would satisfy the mind, and that therefore tradition is on the side of those who do not philosophize about this mystery and who subordinate their mind to faith, without uselessly involving themselves in these enormously difficult questions.

It would be wrong, then, to ask philosophers to give clear and straightforward explanations of how the body Jesus Christ is in the Eucharist, for that would amount to asking them to make innovations in theology. And if philosophers were so ill-advised as to comply, it would seem they could not avoid having either their theology or their philosophy condemned. For if their accounts were obscure, their philosophical principles would rightly be distrusted; and if their response were clear or straightforward, perhaps there would be apprehension over the novelty of their theology, even though it might conform to the dogma of Transubstantiation.

Since novelty in theological matters smacks of error, and since we are right in dismissing views solely because they are new and without foundation in tradition, we should not, except for pressing reasons, undertake intelligible and strightforward explanations of things that the Fathers and Councils have not entirely explained; it is enough to hold the dogma of Transubstantiation, without explaining it. To do otherwise would be to sow the seeds of new disputes and quarrels, of which there are already too many, and the enemies of truth would not fail to use them maliciously to oppress their opponents.

Disputes concerning theological explanations seem to be the most useless and most dangerous of all, and they are all the more to be feared in that even people of piety often imagine that they need not be charitable with those who are not of their opinion. We have had only too many experiences of that sort of thing, and its cause is obvious enough. Thus, the best and safest course is never to hurry into talk about things about which one has no evidence and which others find difficult to understand.

Also, obscure and tenuous explanations of the faith, which we are not obliged to believe, should not serve as rules and principles in philosophical reasoning, where only evidence should convince us. The clear and distinct ideas of extension, figure, and locomotion must not be exchanged for the general and confused ideas of principle or subject of extension, form, quiddities, real qualities, or motion other than locomotion such as generation, corruption, alteration and the like. Real ideas produce real science, but general or logical ideas never produce anything but a science that is vague, superficial, and sterile. We must, then, carefully consider the distinct, particular ideas of things in order to discover the properties they contain, and study nature in this way rather than losing ourselves in chimeras that exist only in certain philosophers' minds.

Furthermore, the truth that the soul is spiritual and immortal is essential to religion and morals, and the last Lateran Council[a] ordered philosophers to teach it and to refute the arguments attacking it. Now, if we suppose that the essence of matter is not extension in height, breadth, and depth, but some other thing we are not familiar with, how shall we refute the error of the freethinker, who maintains and even shows with plausible arguments that it is the matter composing the brain that thinks, reasons, wills, and so forth? How can we prove that a thing we do not know does not have such and such a property, or convince them of their error who claim that when the brain is injured we no longer think, or think poorly? But moreover, as the Fathers and Saint Augustine, among others, have always recognized that extension is the essence of matter, and as no one will ever distinctly conceive how an organized body such as Jesus Christ's could be reduced to a mathematical point—I do not say a physical point (for we clearly conceive that God can reduce a billion organized bodies into the extension of a grain of sand, for that extension is infinitely divisible) do we think that we dignify the dogma of Transubstantiation and lead heretics to the faith by maintaining that the body of Jesus Christ exists unextendedly in the Eucharist? On the contrary, must we not fear to overthrow it, if it is not certain that Saint Augustine was correct in saying, take away extension from bodies and you annihilate them. Let us therefore believe the dogmas established by the Church, for she is infallible, but let us suspend judgment on the explanations given of them.[b]

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[a] Session 8.

[b] See my *Défense* against the accusations of Louis de la Ville, printed at the end of the *Treatise on Nature and Grace*. See also *Dialogues on Metaphysics and Religion*, Dialogue 13, from number 10 to the end.

BOOK THREE: PART TWO

Chapter Nine

I. The last general cause of our errors. II. That the ideas of things are not always present to the mind whenever we wish. III. That every finite mind is subject to error, and why. IV. That we ought not judge that only minds and bodies exist, or that God is a mind or spirit as we conceive of minds.

I. The final general cause of our errors.

Up till now we have discussed the errors whose occasional cause might be located in the nature of the pure understanding (or the mind considered in itself) or in the nature of ideas, i.e., in the way the mind perceives external objects. All that remains now is to explain a cause that might be termed the general and universal cause of all our errors, because every conceivable error depends on it in some way. This cause is, that since nothingness has no idea representing it, the mind is led to believe that things of which it has no idea do not exist.

Surely the general source of our errors is, as we have already said a number of times, that our judgments are of greater scope than our perceptions. For when we consider some object, we ordinarily do so from one aspect only; and as we are not satisfied with judging merely from the aspect we have considered, we instead judge the whole object. Thus, it often happens that we are mistaken, because though the thing may be true from the aspect we have examined, it is commonly false from another, and what we take to be true in fact only seems to be so. Now, it is clear that we would not pass absolute judgments on things as we do unless we thought we had considered all their aspects, or unless we presumed all their aspects to be like the one we had examined. Thus, the general cause of our errors is that since we have no idea of the other aspects of our object, or of their difference from the one present to our mind, we believe that these other aspects do not exist, or we at least suppose that they are not particularly different.

This way of carrying on seems reasonable enough to us. For, given that nothingness forms no idea in the mind, we have some grounds for believing that things forming no idea in the mind when we examine them are like nothingness. And we are confirmed in this by a kind of instinctive belief that ideas of things are due to our nature, and that they are subject to the mind in such a way that they must be present to it whenever it wishes.

II. That the ideas of things are not present to the mind whenever we wish.

Yet if we reflected a little about the present state of our nature, we would not be so inclined to believe that we have all the ideas of things whenever we wish. Since Original Sin, man is, as it were, but flesh and blood. The least impression from his senses or passions interrupts his mind's closest attention, and the flow of spirits and blood sweeps the mind along with it and continually drives it toward sensible objects. It is often only in vain that the mind struggles against this torrent carrying it along, and rarely does the mind think of resisting it, for it is too pleasant to follow it and too exhausting to oppose it. The mind is depressed and discouraged as soon as it has made an effort to stop itself and grasp a particular truth; hence, it is absolutely false that in our present state ideas of things are present to our mind every time we wish to consider them. Thus, we should not judge that things do not exist from the sole fact that we have no ideas of them.

III. Every finite mind is subject to error.

But even if we suppose man to be the absolute master of his mind and ideas, still by his nature he would necessarily be subject to error. For the mind of man is limited, and every limited mind is by its nature subject to error. The reason for this is that the least things have an infinity of relations between them, and to comprehend them an infinite mind is required. Thus, given that a finite mind, whatever effort it might make, can neither embrace nor comprehend all these relations, man is led to believe that those he does not perceive do not exist, especially when he does not heed the weakness and limitation of his own mind, which is a common failing. Thus, the limitation of the mind alone carries with it the capacity for falling into error.

Yet if men, even in their state of weakness and corruption, always made proper use of their freedom, they would never be mistaken. For this reason everyone falling into error is justifiably reprimanded and even deserves to be punished; for to avoid error, it is enough to judge only what we see and never to make complete judgments except about things all of whose parts we are certain we have examined, which are two things in our power to do. But men prefer to subjugate themselves more to error than to the rule of truth, and they want to make decisions carelessly and without effort. Thus, it should not be surprising if they fall into an infinite number of errors and often make less than certain judgments.

IV. That we ought not judge that minds and bodies are the only created things, or that God is a mind or spirit as we conceive of minds.

The only ideas of substance men have, for example, are those of mind and of body, i.e., of a thinking substance and of an extended substance. And from this they claim the right to conclude that everything which exists is either a body or a mind. Not that I presume to claim that there is some substance that is neither mind nor body—for we should not claim that things exist when we have no knowledge of them, since God, who never conceals His works from us, seemingly would have given us some idea of it. Yet I believe that, through our ideas of them, we should decide nothing concerning the number of kinds of beings God has created, since, speaking absolutely, it is possible that God has reasons we do not know for concealing them from us—even if it were only for the reason that since these beings have no relation to us, knowing them would be of no use to us, just as He did not give us eyes strong enough to count the teeth of a gnat, because our having such sharp vision would be useless for the preservation of our body.

But though I do not think it right to judge hastily that every being is either a mind or a body, yet I feel that it is completely contrary to reason that philosophers, in order to explain natural effects, employ ideas other than those depending on thought and extension, since these are indeed the only ideas we have that are distinct or particular.

There is nothing so unreasonable as to imagine an infinity of beings based on the simple ideas of logic, to attribute to them an infinity of properties, and to wish thus to explain things we do not understand through things we not only do not conceive but even cannot conceive. This is to act like blindmen, who, wishing to converse about colors and to have opinions about them, would use definitions philosophers give them to draw conclusions. For as these blindmen could produce only comical and ridiculous arguments about colors—because they would have no distinct ideas of them, and because they would reason on the basis of general ideas and ideas of logic—so philosophers cannot reason solidly on the effects of nature when to this end they employ only general ideas and ideas of logic, i.e., act, potency, being, cause, principle, form, quality, and other such ideas. It is absolutely necessary that they rely solely on the distinct, particular ideas of thought and extension, and those ideas contained in them or that can be deduced from them. For we should not expect to understand nature without considering the distinct ideas we have of it, and it is better not to meditate at all than to meditate on chimeras.

We should not claim, however, that all that exists are minds and bodies, thinking beings and extended beings, because we might be mistaken in this. For though it suffices to explain nature, and consequently we can conclude without fear of being mistaken that the natural things we have some knowledge of should depend on extension or thought, yet absolutely speaking it is possible that there are others of which we have no idea and see no effect.

Men's judgment is hasty, then, when they judge as an indubitable principle that every substance is either a body or a mind. But they draw another hasty conclusion when by the light of reason alone they conclude that God is a mind or spirit. It is true that since we are created in His image and likeness, and since Sacred Scripture in several places teaches us that God is a spirit, we must believe this and call Him a spirit—but reason alone cannot teach us this. It tells us only that God is an infinitely perfect being, and that He must be a mind rather than a body since our soul is more perfect than our body, but it does not assure us that there are no beings still more perfect than our minds, and higher above our minds than our minds are above our bodies.

Now if there were these beings—and reason makes it seem indubitable that God could have created them—it is clear that they would resemble God more than we do. Thus, reason also informs us that God would have their perfections rather than ours, which to them would be but imperfections. We should not jump to conclude, then, that the word *mind*, which we use to express what God is and what we are, is a univocal term signifying the same or quite similar things. God is a mind or spirit, He thinks, He wills; but let us not humanize Him—He does not think or will as we do. God is higher above created minds than created minds are above bodies, and we should term God a mind not so much to show positively what He is as to indicate that He is not material. He is an infinitely perfect being, and this we cannot doubt. But as we should not imagine with the Anthropomorphites that He must have a human figure because this seems to be the most perfect figure—even if we supposed Him to be corporeal—so we should not think that the mind of God has human thoughts and that His mind is like ours because we know of nothing more perfect than it. Rather, we should believe that as He contains within Himself the perfections of matter without being material, since it is certain that matter is related to some perfection in God, so He also comprehends the perfections of created minds without being a mind in the way we conceive of minds, and that His true name is HE WHO IS, i.e., unrestricted being, all being, the infinite and universal being.

BOOK THREE: PART TWO

Chapter Ten

Examples of some errors in physics that we fall into because we suppose that beings that in fact differ in their nature, qualities, extension, duration, and proportion are alike in all these things.

We saw in the preceding chapter that men judge hastily when they judge that every being is one of but two kinds, minds or bodies. In the following chapters we shall show that when they judge that beings are not different in either their relations or modes because they have no idea of these differences, their judgments are not only hasty but also quite false and are the sources of an infinite number of errors.

It is certain that the mind of man seeks out only the relations of things; first those the objects it is considering might have with it, and then the relations they have among themselves. For the mind of man seeks out only two things, its own good and the truth. To find its good, it carefully considers through reason and taste, or sensation, whether objects have a relation of agreement with it. To find the truth, it considers whether objects have a relation of equality or resemblance between them, or precisely what magnitude is equal to their inequality. For just as the good is the mind's good only because it is agreeable to it, so the truth is the truth only through the relation of equality or resemblance found between two or more things—be it between two or more objects, as between an ell and some cloth, for the cloth is an ell because of the equality between the ell and the cloth, or between two or more ideas, as between the two ideas of three and three and the idea of six, for three and three are six because of the equality between the two ideas of three and three and the idea of six, or finally, between ideas and things, as when ideas represent what things are; for when I say that a sun exists, my proposition is true because the ideas I have of existence and the sun represent that the sun exists, and the sun truly exists. All the mind's action and attention toward objects, then, is only in an attempt to discover their relations, because we attend to things only to learn of their truth or goodness.

But as we have already said in the preceding chapter, its attention greatly tires the mind. It soon gives up resisting the impression of the senses that diverts it from its object and carries it toward others that its love for the body makes agreeable to it. The mind is extremely limited and thus is incapable of distinguishing the differences among the subjects it considers, which are infinite or almost infinite. The mind therefore supposes imaginary resemblances, or fails to notice real and positive differences, since ideas of resemblance are simpler, more familiar, and more present to it than others. For clearly resemblance includes only one relation, and a single idea is needed to judge that a thousand things are similar, whereas to judge without fear of error that a thousand objects are all different from one another, a thousand different ideas absolutely must be present to the mind.

Men imagine, then, that things of a different nature are of the same nature, and that all things of the same species hardly differ from one another. They judge that unequal things are equal, that uncertain things are certain, and that things without order or proportion are well-ordered and proportioned. In a word, they often believe that things differing in nature, quality, extension, duration, and proportion are alike in all these things. But this deserves to be explained at greater length with several examples, because it is the cause of an infinite number of errors.

Mind, the substance that thinks, and body, the substance that is extended, are two entirely different and completely contrary kinds of beings—what belongs to the one cannot belong to the other. Yet since they pay so little attention to the properties of thought, and since they are continually affected by the body, most men have viewed the soul and the body as one and the same thing; they have fancied a resemblance between two so different things. They have made the soul out to be material, i.e., extended throughout the entire body and figured like the body. They have attributed to the mind what can belong only to the body.

Moreover, given that men sense pleasure, pain, odors, tastes, and so on, and that their body is more present to them than their very soul, i.e., that they easily imagine their body and cannot imagine their soul, they have attributed to the body the faculties of sensing, imagining, and sometimes even of conceiving, all of which can belong only to the soul. But the following examples will be more illustrative.

It is certain that all natural bodies, even those said to be of the same kind, differ from each other, that no two portions of gold are entirely like, and that one drop of water is different from another drop of water. What is true of faces is also true of all bodies of the same kind. All faces have two eyes, a nose, a mouth, and so on, and they are all faces and faces of men; and yet it might be said that there have never been two entirely alike. Similarly, a piece of gold has parts very much like another piece of gold, and one drop of water certainly bears a great resemblance to another drop of water; yet it might be affirmed that no two drops can be produced, even from the same river, that are exactly alike. Nevertheless, philosophers unreflectingly assume essential likenesses between bodies of the same kind, or likenesses that are indivisible, for according to their false view, the essences of things are indivisible.

The reason why they fall into such a gross error is that they are unwilling to consider carefully the things on which they meanwhile compose thick volumes.

For just as we do not suppose a perfect resemblance between faces, because we take care to view them from up close, and because the habit we have formed of distinguishing them makes us notice the smallest differences between them, so if philosophers would consider nature with some attention, they would recognize sufficient causes of diversity even in things that cause the same sensations in us, and that we therefore term of the same kind, and they would not so easily assume essential likenesses. Blindmen would be wrong if, because they did not perceive any sensible differences between faces, they were to suppose an essential, indivisible likeness between them. Philosophers, then, should not assume such likenesses in bodies of the same kind because they do not notice any differences in them.

Our inclination toward assuming likenesses in things also leads us to believe that there is a determinate number of differences and forms, and that these forms cannot vary quantitatively. We think that all bodies differ from each other by degrees, as it were, that these degrees even maintain certain proportions between them—in a word, we judge material things as if they were numbers.

Clearly all this is due to the fact that the mind loses itself among the relations of incommensurable things, among which are the infinite differences found in natural bodies, and is relieved to fancy some resemblance or proportion between them, because it can then represent several things to itself with great ease. For as I have already said, only one idea is needed to judge that things are alike, whereas many are needed to judge that they are all different. For example, if a man knew the number of angels, and that for each angel there were ten archangels, and that for each archangel there were ten thrones, and so on with the same ten-to-one proportion up to the last order of Intelligences, his mind could know at will the number of all these blessed spirits and with a little effort even judge their number at a single glance—which must please it enormously. And this might have led certain people thus to judge the number of the celestial spirits, as has happened to certain philosophers who have placed a tenfold proportion of lightness and heaviness among the elements by supposing fire ten times lighter than air, and so on for the others.

When the mind finds itself forced to admit differences between bodies by the different sensations it has of them, and for other reasons as well, it always does so to the least extent that it can. This is why it easily convinces itself that the essences of things are indivisible and that they are like numbers, as we have just said—because it then needs but one idea to represent all the bodies it terms of the same kind. If a glass of water is poured into a hogshead of wine, for example, the philosophers would have it (a) that the essence of the wine remains the same and that the water is converted into wine, (b) that just as there can be no number between three and four, since true unity is indivisible, so the water must be converted into the nature and essence of wine, or else the wine must lose its nature, (c) that just as every number four is exactly like every other, so the essence of water must be exactly alike in all amounts of water, (d) that as the number three differs esentially from the number two and cannot have the same properties it has, so two bodies of different kinds differ essentially, and in such a way that they can never have the same essential properties, and other such things. Yet if men would attentively consider the true ideas of things, they would soon discover that, given that all bodies are extended, their nature or essence bears no resemblance to numbers and cannot be indivisible.

Men not only suppose identity, likeness, or proportion in the nature, number, and essential differences of substances, but they make the same suppositions about everything they perceive. Practically all men judge that the fixed stars are all at an equal distance from the earth and are attached to the sky as to a vault. Astronomers for a long time held that the planets revolve in perfect circles, and in order to explain the phenomena contradicting their prejudices, they invented a huge number of circles, such as concentrics, eccentrics, epicycles, deferents, and equants.

It is true that in recent ages the more ingenious among us have corrected the ancients' errors and that they now believe that the motion of the planets describes certain ellipses. But if they assume that these ellipses are regular—as one is led to believe, since the mind supposes regularity where it fails to see irregularity—they fall into an error all the more difficult to correct, as the observations we can make of the course of the planets cannot be correct or precise enough to show the irregularity of their motion. Only physics can correct this error, for it is less perceptible than the error found in the system of perfect circles.

But something remarkable has occurred with regard to the distance and motion of the planets. For since astronomers have been unable to find either an arithmetical or geometrical proportion among them, this being manifestly contrary to their observations, some of them have imagined that the planets preserve a kind of proportion they term harmonic in their distances and motion. Hence, it is that an astronomer of this century in his[a] *Almagestum novum,* begins the section entitled "De systemate mundi harmonico" with the following words: "There is no astronomer who would fail to recognize a kind of harmony in the motion and intervals of the planets if he but carefully consider the order found in the heavens." Not that the author is of this opinion—for observations that have been made have shown him the extravagance of this imaginary harmony that has nonetheless been the admiration of many ancient and modern authors whose views Father Riccioli relates and then refutes. Pythagoras and his followers are even said to have believed that through their regular motion the heavens produce a wonderful concert, which men do not hear because they are accustomed to it—just those who live near the rapids of the Nile, said Pythagoras, do not hear its noise. But I raise this view concerning the harmonic proportion of the distances and motion of the planets only to show that the mind is pleased with proportions and often sees them where they are not.

The mind also assumes uniformity in the duration of things, and when it is not forced, as it were, by the reports of the senses to judge otherwise, it imagines that things are not subject to change and instability.

All material things, being extended, are capable of division and hence of corruption; a little reflection on the nature of bodies clearly shows them to be

[a] Father Riccioli, vol. 2.

corruptible. Yet there have been a great number of philosophers who are convinced that the heavens, though material, are incorruptible.

We are too far away from the heavens to be able to discover the changes occurring there, and rarely are there changes great enough to be visible from here below. This was enough for an infinity of people to believe that they were indeed incorruptible. And they were confirmed in their view in that they attributed the corruption occurring in sublunary bodies to contrariety of qualities. For as they never were in the heavens to see what happens there, they had no experience to the effect that this contrariety of qualities is found there—which led them to believe that it is in fact not found there. Thus, on the basis that what according to their view corrupts everything here below is not found up there, they concluded that the heavens were exempt from corruption.

This argument clearly is without foundation, for I do not see why some cause of corruption might not be found other than this contrariety of qualities they imagine, nor on what basis they can claim that there is no heat, cold, dryness or moisture in the heavens, and that the sun is not hot and Saturn not cold.

There is some plausibility in saying that hard stones, glass, and other bodies of this nature do not corrupt, since we see them subsist for a long time in the same state, and we are close enough to see the changes that would take place in them. But given our great distance from the heavens, it is completely contrary to reason to conclude that they do not corrupt because we do not perceive contrary qualities there and do not see that they corrupt. Yet not only do they say that the heavens do not corrupt, but they say absolutely that the heavens are inalterable and incorruptible, and the Peripatetics very nearly say that the celestial bodies are so many divinities, as their master Aristotle believed.

The beauty of the universe does not consist in the incorruptibility of its parts but in the variety found in them, and this great work that is the world would not be so admirable without the vicissitude of things we see in it. Matter infinitely extended, without motion, and consequently without form and without corruption, would manifest the infinite power of its Author, but it would give no idea of His wisdom. For this reason, all corporeal things are corruptible, and all bodies have some change taking place in them that with time alters and corrupts them. Even stones and glass are perhaps food for certain insects.[a] These bodies, though quite hard and dry, are not exempt from corruption with time. The air and the sun to which they are exposed change some of their parts, and they provide nourishment for certain worms, according to experiments reported on the matter.

There is no difference between these very hard and dry bodies and all others, other than that they are composed of very gross and solid parts, and consequently are less capable of being agitated and separated from one another by the motion of bodies striking against them—which makes us view them as incorruptible. Yet they are not so by their nature, as time, experience and reason make sufficiently manifest.

And as for the heavens, they are composed of the most fluid and subtle matter, especially the sun, which, far from being incorruptible and without heat, as the followers of Aristotle say, is of all bodies the hottest and most subject to change. The sun even heats, agitates, and changes all things, for through its action, which is nothing but its heat, or the motion of its particles, it produces all the changes we see with the seasons. Reason demonstrates these things; but if reason can be withstood, experience cannot. For since we have discovered through the use of telescopes or large glasses spots in the sun as large as the entire earth, which form there and are dispersed in a short time, we can no longer deny that it is subject to change a great deal more than the earth we inhabit.

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[a] *Journal des Sçavans* of 9 August 1666.

All bodies, then, are in a state of continuous motion and change, and especially those that are most fluid, such as fire, air, and water; next would be the parts of living bodies, such as flesh and even bones, and finally the bodies that are hardest; and the mind should not suppose a kind of immutability in things because it does not see change or corruption in them. For it is no proof that a thing remains the same because we see no difference in it from one time to another, nor that things do not exist because we have no idea or knowledge of them.

BOOK THREE: PART TWO

Chapter Eleven

Examples of some errors in morals that depend on this same principle.

This aptitude the mind has for imagining and supposing resemblances, especially where it does not visibly recognize differences, also casts most men into very dangerous errors in moral matters. Here are some examples of this.

A Frenchman meets an Englishman or an Italian. The foreigner has his own particular humor; he is refined, or, if you wish, he is vain and disagreeable. This will immediately lead the Frenchman to judge that all Englishmen, or all Italians, have the same character of mind as the one he has met. He praises or condemns them all as a whole, and if he meets another of them, the Frenchman is immediately struck by his being like the one he has already seen, and he gives in to some secret liking or dislike for the man. In a word, he will judge all the individuals of these countries on the remarkable evidence that he has seen one or more having certain qualities of mind, because having no information from any other source about their differences, he supposes them all alike.

A member of some religious order falls into error and this is enough for most of those who know about it to condemn indifferently all the individuals of the same order. They all wear the same habit and have the same name, and as they are alike in these things it is enough for ordinary men to fancy them alike in everything. They suppose them alike because they do not penetrate to the bottom of the hearts of these individuals to see positively whether they differ.

Slanderers who seek means of besmirching their enemies' reputation commonly employ this technique, and experience informs us of their almost universal success. Indeed, it is well suited to the standard of ordinary men, and there is no difficulty in finding in large communities, however holy they might be, somebody who fails to keep the rule or is of improper persuasion, since in the company of apostles, of which Jesus Christ Himself was the head, there was a robber, a traitor, a hypocrite, in a word, a Judas.

The Jews undoubtedly would have made a great mistake had they judged ill of the holiest society there ever was on account of the avarice and corruption of Judas, or had they condemned them all because they allowed this miserable man in their midst and because Jesus Christ himself, though he knew his crimes, did not punish him.

It is clearly against reason and charity, then, to assume that an entire community is in error because some of its members have erred, even if its leaders should hide the error, or be themselves caught up in it. It is true that when all the individuals of a community willingly uphold the error or mistake of their confrere the whole community should be judged guilty. But I might add that this hardly ever happens, for it appears morally impossible that all the individuals of an order should hold the same views.

Men therefore should not draw general conclusions in this way on the basis of particulars; but they cannot judge simply about what they see, they always go to extremes. A religious of a given order is a great man, a man of good will, and from this they conclude that the whole order is full of great men and men of good will. Likewise, a member of a given order is of improper persuasion, and therefore the whole order is corrupt and of improper persuasion. But these latter judgments are much more dangerous than the former, because we should always judge well of our neighbor, and because the malice of men makes our condemnation and speech against the reputation of others much more pleasing and makes a greater impression on the mind than do our complimentary judgments and speech.

When a wordly man, who follows his passions, remains rooted in his view and pretends he is right in following the impulse of his passions, he is properly judged to be opinionated and will recognize himself as such when his passion has abated. Likewise, when a pious man who is convinced of what he says, and who has seen the truth of religion and the vanity of wordly things, wishes by his lights to oppose the misbehavior of others and reprimands them with some zeal, wordly men judge that he too is opinionated, and in this way conclude that all devout people are opinionated. They even judge that people of good will are much more opinionated than unruly, evil people, because these latter defend their opinions only according to the various agitations of their blood and passions and cannot long retain their views, and in fact, soon give them up. Instead, pious people remain firm in theirs, because theirs are based only on secure foundations, which do not depend on so uncertain a thing as the circulation of the blood and humors.

Here, then, is why ordinary men judge that people of piety are as opinionated as vicious people. The reason is that good people are as impassioned for the truth and virtue as bad men are for vice and lies. Both speak in almost the same way to uphold their views; they are alike at least in this, though at bottom they are different. But this is enough for those who do not comprehend the difference in their reasons, to judge them alike in everything, i.e., because they are alike in the way everyone is capable of judging.

The devout, then, are not opinionated; they are only firm as they should be, whereas vicious men and libertines are always opinionated, even if they should remain in their position for but an hour, because one is always opinionated when one defends a false opinion, even if one defends it for but a short time.

The same is true of certain philosophers who have maintained chimerical opinions that they reject. They would have others who defend certain truths whose certitude they clearly see give them up as mere opinions, as they have given up those that they had been inappropriately obstinate about. And because it is not easy to defer to them at the expense of truth, and because our natural love for the truth leads us to defend it ardently, they judge us opinionated.

These people were wrong to defend their chimeras so obstinately, but the others are right in maintaining the truth with strength and firmness of mind. The manner of each is the same, but their views differ, and this is what makes the latter firm and the former opinionated.

CONCLUSION OF THE FIRST THREE BOOKS

At the outset of this work, I distinguished, as it were, two parts in the simple and indivisible being of the soul, the one purely passive and the other both active and passive. The first is the mind or the understanding; the second is the will. I have attributed to the mind three faculties, because it receives its modifications and ideas from the Author of nature in three ways. I have called it sense when it receives from God ideas mixed with sensations, i.e., sensible ideas, on the occasion of certain movements taking place in its sense organs in the presence of objects. I have called it imagination and memory when it receives from God ideas mixed with images, which are a kind of weak and languid sensation the mind receives only because of certain traces being produced or aroused in the brain by the flow of spirits. Finally, I call it pure mind, or pure understanding, when it receives from God entirely pure ideas of the truth, with no admixture of sensations or images, through its union not with the body but with the Word, or the Wisdom, of God; not because it is in the sensible, material world, but because it subsists in the immaterial, intelligible world; not in order to know mutable things suited to the preservation of the life of the body, but to enter into immutable truths, which preserve in us the life of the mind.

In the first and second books, I showed (a) that our senses and imagination are very useful to us in knowing the relations external bodies have to our own; (b) that all the ideas the mind receives through the body are entirely for the benefit of the body; (c) that no truth whatever can be clearly discovered through the idea of the senses or the imagination; (d) that these ideas serve only to bind us to our body and through it to all sensible things; and finally; (e) that if we wish to avoid error, we should not place our trust in them. I further concluded (a) that it is morally impossible to know through the mind's pure ideas the relations that bodies have with our own; (b) that we should not reason with these ideas in order to know whether an apple or a stone is good to eat, but that we must taste them; and (c) that although the mind can be used to know in a confused way the relations other bodies have with our own, it is always safest to use the senses. I shall give a further example of this, for truths that are so necessary and essential cannot be impressed too much upon the mind.

Suppose I wish to determine, for example, which would be of greater advantage to me, to be just or to be rich. If I open the body's eyes, justice seems to be a chimera; I see nothing attractive in it. I see the just miserable, abandoned, persecuted, without defense or consolation, because He who consoles and supports them does not appear to my eyes. In a word, I do not see of what use justice and virtue could possibly be. But if with my eyes open I consider riches, I am immediately struck and dazzled by them. Power, grandeur, pleasures, and all the sensible goods accompany riches, and I cannot doubt that to be happy we need only be rich. Likewise, if I use my ears I hear how everyone values riches, talks only of the means to obtain them, and constantly praises and honors those who possess them. This and all the other senses tell me, then, that I must be rich in order to be happy. But if I close my eyes and ears and consult my imagination, it will unceasingly represent what my eyes have seen, what they have read, and what my ears have heard about the advantage of riches. But it will also represent these things in an entirely different way than do the senses, for the imagination always increases the ideas of things that we love and that are related to the body. If I let it have its way, it will soon lead me into an enchanted palace like those so wonderfully described by poets and novelists, and there I shall see beauties I need not describe that will convince me that only the god of riches inhabiting it is capable of making me happy. This is what my body can convince me of, for it speaks only in its own interest, and the imagination must bow before the grandeur and splendor of riches, for the good of the body.

But if I consider that the body is infinitely below the mind, that the body cannot be its master, and that the body cannot inform it of the truth or illuminate it, and if with this attitude I withdraw into myself and ask myself—or rather (since I am neither my own master nor my own light), if I draw near God and, with my senses and passions quiet, ask Him whether I should prefer riches to virtue or virtue to riches—then shall I hear a clear and distinct reply about what I should do, an eternal reply that has always been given, is being given, and always will be given, a reply I need not explain because everyone knows it, both those who read this and those who do not, a reply that is neither Greek, nor Latin, nor French, nor German, but that all nations understand, a reply, in short, that consoles the just in their poverty and afflicts sinners in the midst of their riches. I shall hear this reply and be persuaded by it. I shall laugh at the visions of my imagination and the illusions of my senses. The inner man in me will mock the terrestrial, animal man that I wear. Finally, the former man will be destroyed and the new will thrive—provided, however, that I obey the voice of Him who speaks to me so clearly in the most secret recesses of my reason, and who having made Himself sensible to adapt Himself to my weakness and corruption and to give me life through what used to give me death, speaks to me still in a strong, lively, and familiar way through my senses, i.e., through the preaching of His Gospel. But if I consult Him in all metaphysical, natural, and purely philosophical questions as well as in questions regarding rules of conduct, I shall always have a loyal master who will never deceive me—I shall be not only a Christian but a philosopher as well; I shall be a sound thinker and a lover of what is good;

in a word, I shall follow the road leading to all the perfection I am capable of either by nature or by grace.

It must therefore be concluded from what I have said that to make the best possible use of the faculties of our soul, our senses, our imagination, and our mind, we should apply them only to those things for which they were given us. Our sensations and imaginings must be carefully distinguished from our pure ideas, and the former must guide our judgments about the relations external bodies have with our own, without our using them to discover the truths they always confound; and we must use the mind's pure ideas to discover these truths, without using them to make judgments about the relations external bodies have with our own, because these ideas never have enough scope to represent them exactly.

Men cannot, at a given period during sickness, have sufficient knowledge of all the figures and motion of the tiny particles of their body and blood, as well as of those of a particular fruit, to know that there is a relation of agreement between the fruit and their body such that if they eat it they will recover. Thus, our senses[a] alone are more useful in preserving the body's health than the rules of experimental medicine, and the latter is more useful than theoretical medicine. But theoretical medicine that gives way to experience and even more so to the senses is best, because all these things should be joined together.

We can use reason in all matters, then, which is its privilege over the senses and the imagination, that are limited to sensible things—but it must be used with moderation. For although reason is our principal part, it often happens that we err by letting it act too much, because it cannot act very long without tiring, that is, it might not know enough to judge properly and yet we want to judge.

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[a] See the *Elucidations* [13].

BOOK FOUR: THE INCLINATIONS, OR, THE MIND'S NATURAL IMPULSES

Chapter One

I. Minds must have inclinations as bodies have motions. II. The only impulse God gives to minds is for Himself. III. Minds are moved toward individual goods only through their impulse toward the good in general. IV. The source of the principal natural inclinations, which will be the sections into which this fourth book will be divided.

There would be no need to discuss natural inclinations, as we are about to do in this fourth book, or the passions, as we shall do in the following book, in order to discover the causes of men's errors, if the understanding did not depend on the will in our perception of objects. But because it receives its direction from the will, and its attention is directed by the will toward certain objects rather than others, it is absolutely necessary that its inclinations be well understood, in order to penetrate the causes of the errors to which we are subject.

I. Minds must have inclinations just as bodies have motions.

If, in creating the world, God had produced infinitely extended matter without impressing any motion on it, no body would have been different from any other. The entire visible world would still be but a single mass of matter or extension that would have served as witness to the grandeur and power of its Author; but there would not have been the succession of forms and variety of bodies that constitute the beauty of the universe and lead all minds to admire the infinite wisdom of Him who governs it.

Now it seems to me that the mind's inclinations stand to the spiritual world as motion does to the material world, and that if every mind were without inclinations or never willed anything, there would not be, in the order of spiritual things, the variety that arouses admiration not only for the profundity of God's wisdom, as does the diversity found in material things, but also for His mercy, justice, goodness, and generally all His other attributes. The difference inclinations make among minds is therefore rather like that made by motion among bodies, and the inclination of minds together with motion in bodies constitutes all there is of beauty among created beings. Thus, every mind must have some inclinations just as bodies have different kinds of motion. But let us now try to discover what inclinations they must have.

If our nature had not been corrupted there would be no necessity for employing reason, as we are about to do, in seeking the natural inclinations created minds must have; all we would have to do would be to consult ourselves, and we would recognize through the inner sensation we have of what occurs within us all the inclinations we naturally must have. But because we know through faith that Original Sin has upset the order of nature, and because even reason teaches us that our inclinations are disordered (as will be made clearer in what follows), we are obliged to take another tack; as our sensations are untrustworthy we are obliged to explain things in a way which, though more sublime, will undoubtedly seem less firm to those who appreciate only what can be sensed.

II. God has no other principal end for His action than Himself, and they only impulse God gives to minds is for Himself.

It is an unquestionable truth that God can have no other principal end for His operations than Himself and that He may have many subordinate ends all of which tend toward the preservation of the beings He has created. He can have no other special end than Himself because He cannot err or place His final end in beings that do not contain every sort of good. But He can have as a subordinate end the preservation of created beings, since as they participate in His goodness, they are necessarily good and even, according to Scripture, very good: *valde bona*. [Gen. 1:31] Thus, God loves them, and it is even His love that preserves them because every being subsists only insofar as God loves it. ''Diligis omnia quaesunt,'' says the sage, ''& nihil odisti eorum quae fecisti: nec enim odiens aliquid constituisti & fecisti. Quomodo autem posset aliquid permanere, nisi tu voluisses; aut quod a te vocatum non esset conservaretur'' [Wisd. 11:25–26]. Indeed, it is inconceivable that things not pleasing to an infinitely perfect and omnipotent being should subsist, since all things subsist only by His will. God wills His glory, then, as His principal end and the preservation of His creatures only for His glory.

Since the mind's natural inclinations are undoubtedly the constant impressions of the Will of Him who has created and preserves them, it seems to me that these inclinations must be exactly like those of their Creator and Preserver. By their very nature, then, they can have no other principal end than His glory, nor any secondary end than their own preservation as well as the preservation of others, though always in relation to Him who gives them being. For in short, it seems to me incontrovertible that since God cannot will that the wills He has created should love a lesser good more than a greater good, i.e., that they should love more what is less lovable than what is more lovable, He cannot create a creature without directing it toward Himself and commanding it to love Him more than all things, though He can create it free and with the power of separating itself and turning from Him.

III. Minds are moved toward particular goods only through their impulse toward the good in general.

As there is properly but one love in God, which is His love for himself, and as God can love nothing except through this love (since God can love nothing except in relation to Himself), so God imprints but one love in us, which is the love of the good in general, and we can love nothing except through this love (since we can love nothing that is not, or that does not seem to be, a good). The love of the good in general is the source of all our particular loves because, in effect, this love is but our will, for, as I have already said elsewhere, the will is nothing other than the continuous impression of the Author of nature that leads the mind of man toward the good in general. It certainly need not be imagined that this power of loving we have comes from, or depends on, us. Only the power of loving badly, or rather of loving well what we should not love at all, depends on us, because as free beings we can and do in effect determine toward particular, and consequently false, goods the good love that God unceasingly imprints in us so long as He continues to preserve us.

But not only our will (or our love for the good in general) comes from God, but also our inclinations for particular goods (which inclinations are common to, but not equally strong among, all men,) such as our inclination toward the preservation of both our own being and those with which we are naturally united are impressions of God's will on us—for by the term natural inclination, I mean all the impressions of the Author of nature common to all minds.

IV. The source of the principal natural inclinations that will be the sections of this fourth book.

I have just said that God loves His creatures and even that His love both endows them with, and preserves, their being. Thus, since God unceasingly imprints in us a love like His own (seeing that it is His will that creates and rules our own), He also provides us with all those natural inclinations that do not depend on our choice, and that necessarily dispose us toward preserving our own being and the being of those with whom we live.

For although sin has corrupted all things, it has not destroyed them. Although our natural inclinations do not always have God as their end by free choice of our will, they always have God as their end according to nature's institution, for God, who produces and preserves them in us, does so only for Himself. Every sinner tends toward God through the impression he receives from Him, though he draws away from Him due to his mind's errors and abberations. Sinners love well enough (for it is impossible to love badly, since God is the source of love), but they love evil things—things that are evil only because God, who endows sinners with the power of loving, prohibits them from loving these things, because since Original Sin they turn men away from His love. For as men imagine that creatures cause in them the pleasure they feel upon their occasion, they furiously chase after material things and utterly forget God, whom they no longer see.

We today, then, still have the same natural inclinations or the same impressions from the Author of nature that Adam had before his sin; we even have the same inclinations as the blessed in heaven, for God does not create or preserve creatures without endowing them with a love like His own. He loves Himself, He loves us, He loves all His creatures; therefore He creates no mind without inclining it to love Him, to love itself, and to love all creatures.

But as all our inclinations are only impressions of the Author of nature that incline us toward loving Him, and all things for Him, they can be controlled only when we love God will all our strength and all things for God through the free choice of our will. For we cannot without injustice abuse the love God gives us for Himself by directing this love toward something other than Him and unrelated to Him. Thus, we presently know not only what our natural inclinations are, but further, what they ought to be, if they are to be well regulated and in accordance with the institution of their Author.

We have then primarily an inclination for the good in general, the cause of all our natural inclinations, of all our passions, and even of all our soul's voluntary love, because this inclination for the good in general gives us the power of withholding our consent to particular goods, which do not fully satisfy it.

Secondly, we have an inclination for the preservation of our own being.

Thirdly, we all have an inclination toward other creatures useful either to us or to those whom we love. We have many other particular inclinations that depend on these, but I give this division only to provide some order. In this fourth book I intend only to relate the errors of our inclinations to three main ones: our inclination for the good in general, self-love, and love of our neighbor.

BOOK FOUR
Chapter Two

I. The inclination toward the good in general is the source of the restlessness of our will. II. And, consequently, of our lack of application and our ignorance. III. First example, that morality is but little known by ordinary men. IV. Second example, that the immortality of the soul is contested by some people. V. That we are extremely ignorant of abstract things, or things that have but little relation to us.

I. The inclination toward the good in general is the source of the restlessness of our will.

Because it was made only for a good that contains all other goods within itself, the will's vast capacity for all goods in general cannot be satisfied by all the things the mind represents to it; and yet this continual impulse toward the good God impresses upon it cannot be arrested. This impulse, never ceasing, necessarily imparts a continual agitation to the mind; the will, searching out what it desires, obliges the understanding to represent to itself all sorts of objects. The understanding represents them to itself, but the soul does not enjoy them; or, if it does, it is not content with them. The soul does not enjoy them because often the mind's perception is not accompanied by pleasure; for it is through pleasure that the soul enjoys its good; and the soul is not content with them, because nothing can arrest the soul's impulse except Him who has imprinted this impression upon it. Everything the mind represents to itself as its good is finite, and everything finite can momentarily distract our love, but cannot hold it permanently. When the mind considers novel and extraordinary objects, or when it considers objects containing something of the infinite, the will allows it to examine them attentively for some time, because it hopes to find what it seeks in them, and what is great and appears infinite and perfect bears the mark of its true good. But after a while, it is disgusted with these things as well as with others. It is therefore always restless, because the will is constantly driven to search after what it can never find, but nevertheless constantly hopes to find. It loves whatever is grand, extraordinary, or contains the infinite because, not having found its true good in common and familiar things, it imagines it will find it in those things it does not know. We shall show in this chapter that the restlessness of our will is one of the principal causes of our ignorance and of the errors into which we fall about an infinity of subjects. In the two following chapters we shall explain what it is that produces in us our inclination for everything great and extraordinary.

II. And, consequently, of our lack of application and our ignorance.

First of all, it is sufficiently evident from what has been said that the will hardly applies the understanding but to those objects that have some relation to us, and that it grossly neglects others. Because the will always ardently desires happiness, and because of its natural impression, it turns the understanding only toward things that appear useful to us and that provide us with some pleasure.

Second, the will does not permit the understanding to be occupied for very long even with those things that give it some pleasure, because, as has been said, all created things can please us for a while, but they quickly become distasteful to us, and then our mind turns away from them and searches once more for something else to satisfy it.

Third, the will is prompted to make the mind run from object to object, because it is never without the confused and, as it were, distant representation of Him who contains all things in Himself (as has been said in the third book). For the will, desiring, so to speak, to approach its true good more closely in order to be affected by it and to receive from it the impulse that animates it, excites the understanding to represent this good to itself in some particular way. But then it is no longer the general, universal, and infinitely perfect being that the mind perceives; it is something limited and imperfect, which cannot arrest the will's impulse, nor please it for very long, and which the will abandons in order to pursue some other object.

Yet since the attention and application of the mind are absolutely essential in order to discover even slightly concealed truths, it is obvious that ordinary men must be in a state of the grossest ignorance even with regard to those things having some relation to them, and a state of inconceivable blindness in relation to all abstract truths and those having no sensible relation to them. But we must try to illustrate these things by examples.

III. First example, that morals is but little known by ordinary men.

No science has such a close relation to us as morals. Morality teaches us our duties to God, our king, our relatives, our friends, and generally to our whole environment. It even teaches us the path we must follow in order to become eternally happy; and all men are under an essential obligation, or rather an indispensable necessity, of applying themselves exclusively to it. Nevertheless, there have been men for 6,000 years, and this science is still very imperfect.

That part of morals concerning our duty to God, which doubtless is the most important part, since it relates to eternity, has been little understood by the most learned men, and even today one finds people of intelligence who have hardly any awareness of it. Nonetheless, it is the easiest part of morals. For, first of all, what difficulty is there in recognizing that there is a God? Everything that God has made proves His existence; everything that men and beasts do proves it;

everything we think, see, and feel proves it; in short, there is nothing that does not prove the existence of God, or that cannot prove it to attentive minds who seriously apply themselves to seeking the Author of all things.

In the second place, it is obvious that we must follow the commands of God in order to be happy. Since He is powerful and just, we cannot disobey Him without being punished, nor can we obey Him without being rewarded. But what does He ask of us? That we love Him, that our minds be occupied with Him, that our hearts be turned toward Him. For why has He created minds? Certainly He can do nothing other than for Himself: He made us then only for Himself, and we are indispensably obliged not to turn away from Him the impression of love that He constantly preserves in us in order that we should love Him constantly.

These truths are not very difficult to discover for anyone who applies himself to them a little. And yet this single principle of morality—that, in order to be virtuous and happy, it is absolutely necessary to love God above all things and in all things—is the foundation of the whole Christian morality. Nor is it necessary to work very hard in order to derive from this principle all the consequences we need to establish the general rules of our conduct, although there are very few people who do derive them, and there are still daily disputes over questions of morality that are the immediate and necessary consequences of a principle as evident as this one.

Geometers are always making new discoveries in their science; now, if they do not significantly perfect this science, it is because they have already drawn the most useful and necessary consequences from their principles. But the majority of men seem incapable of concluding anything from the first principle of morality; even when they wish to think about this principle, all their ideas fade away and vanish, because they are unwilling to think about it in the right way, and this is either because they have no taste for it or because they find it distasteful too soon after tasting it. This principle is abstract, metaphysical, purely intelligible; it is not sensed or imagined. It therefore appears without solidity to carnal eyes, or to minds that see only through their eyes. Nothing is to be found in the dry and abstract consideration of this principle that can quiet the restlessness of their wills and focus their mind's perception in order to consider it with some attention. What hope is there then, that they will see and understand it well, and will directly conclude from it what they should conclude?

If men only imperfectly understood this proposition of geometry, namely, that the sides of similar triangles are proportional to one another, certainly they would not be great geometers. But if, aside from the imperfect and confused understanding of this fundamental proposition of geometry, they had in addition some interest in seeing that the sides of similar triangles were not proportional, and if false geometry were as suitable for their perverse inclinations as false morality, they could well make paralogisms as absurd in geometry as in matters of morality, because their mistakes would be agreeable to them, and because the truth would only embarrass, perplex, and anger them.

We should not be surprised, therefore, at the blindness of men who lived in centuries past when idolatry reigned in the world, or at those now living who are not yet illuminated by the light of the Gospel. Eternal Wisdom finally had to render itself sensible in order to teach men who consult only their senses. For 4,000 years the truth spoke to their minds; but, not entering into themselves, they did not hear it: it had to speak to their ears. The light illuminating all men shone upon their darkness without dispelling it, and they could not even see it; intelligible light had to veil itself and become visible; the Word had to be made flesh, and the hidden and inaccessible wisdom had to be taught to carnal man in a carnal manner; ''carnaliter,'' says Saint Bernard.[a] Most men, and especially the poor, who are the most worthy object of the mercy and providence of the Creator, those who are obliged to work in order to earn their living, are extremely coarse and stupid; they hear only because they have ears and see only because they have eyes. They are incapable of retiring into themselves by some effort of the mind, there to question the truth in the silence of their senses and passions. They cannot apply themselves to the truth, because they cannot enjoy it; and often they do not even bother to try because it does not occur to them to apply themselves to what does not affect them. Their restless and shifting will incessantly turns their minds' perception toward all the sensible objects that please and divert them through their variety; for the multiplicity and diversity of sensible goods make it more difficult for us to recognize their vanity, and always sustain our hope of finding the true good, which we all desire, among these objects.

Hence, although the counsels that Jesus Christ, as man, as Author of our faith, gives us in the Gospel are a great deal more in keeping with the weakness of our mind than those which the same Jesus Christ, as eternal wisdom, as interior truth, as intelligible light, inspires in us in the most secret recesses of our reason; although Jesus Christ makes these counsels agreeable through His grace, sensible by His example, and convincing by His miracles, men are so stupid, and so incapable of reflection even upon matters whose knowledge is critically important for them to know that they hardly ever think about them as they should. Few men see the beauty of the Gospel; few conceive the solidity and necessity of the counsels of Jesus Christ; few meditate upon them; few are nourished and fortified by them, because the continuous agitation of the will, which searches after the enjoyment of the good, does not permit us to stop and think about truths that seem to deprive the will of this enjoyment. Here is another proof of what I say.

IV. Second example, that the immortality of the soul is contested by some people.

The impious undoubtedly must go to great lengths to find out whether their soul is mortal, as they think, or whether it is immortal, as faith and reason teach us. This is a matter of ultimate importance to them, since their eternity is at stake and even their peace of mind depends upon it. How is it, then, that they do not know the answer to this question, or that they remain in doubt about it, if not because they are incapable of paying moderately serious attention to it, and because their restless and corrupted wills do not permit their minds to scrutinize the arguments opposed to the opinions that they wish to be true? For in the end, is it such a difficult thing to recognize that there is a difference between the soul and the body, between that which thinks and that which is extended? Is such great attention of mind necessary in order to see that a thought is neither round nor square, that extension is only capable of different figures and motion, and not of thought and reasoning, and that therefore what thinks and what is extended are two completely opposite beings? And yet this alone suffices to demonstrate that the soul is immortal, and that it cannot perish even should the body be annihilated.

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[a] Serm. 39, *De natali Domini.*

When a substance perishes, it is true that the *modes* or the ways of being of this substance perish with it. If a piece of wax were annihilated, it is true that the figures of the wax would also be annihilated with it, because in effect the roundness of the wax, for example, is only the wax <existing> in a certain way: hence it cannot subsist without the wax. But should God destroy all the wax in the world, it would not follow from this, however, that any other substance, or the *modes* of any other substance, would be annihilated. All stones, for example, would subsist with their *modes*, because stones are substances or beings, and not modes of wax.

Likewise, if God should annihilate half of some body, it would not follow from this that the other half would be annihilated. The second half is united with the first, but it is not one with it. Hence, one half being annihilated, it follows from this, according to the light of reason, that the other half no longer has any relation to it; but it does not follow that it no longer exists, since, its existence being different, it cannot be reduced to nothing by the annihilation of the other. It is therefore clear that since thought is not the modification of extension, our soul is not annihilated, even supposing that death should annihilate our bodies.

But we are even wrong in imagining that the body is annihilated when it is destroyed. The particles composing it are vaporized and turned into dust; one no longer sees or recognizes them. This is true, but one should not conclude from this that they are no longer, for the mind still perceives them. If we divide a mustard seed into two, four, or twenty parts, we annihilate it for our eyes, because we no longer see it; but we have not annihilated it in itself, it has not been annihilated for the mind, for the mind sees it, even though it be divided into a thousand or a hundred thousand parts.

It is a common notion to all men who use their reason rather than their senses that nothing can be annihilated by the ordinary forces of nature; for just as it is naturally impossible for something to be made from nothing, so it is also impossible for a substance or a being to become nothing. The passage from being to nothingness or from nothingness to being is equally impossible. Bodies can therefore be corrupted, if we wish to call the changes that happen to them corruption, but they cannot be annihilated. What is round can become square, what is flesh can become earth, vapor, and whatever you wish, for whatever is extended is capable of all sorts of configurations; but the substance of what is round and of what is flesh cannot perish. There are certain laws established in nature, according to which bodies successively change their forms, because the successive variety of these forms produces the beauty of the universe and gives admiration for its Author. But there is no law in nature for the annihilation of any being, because in nothingness there is no beauty or good, and because the Author of nature loves His work. Therefore, bodies can change, but they cannot perish.

But if you go no further than the report of your senses, and wish to cling obstinately to the view that the dissolution of bodies is truly an annihilation (because the parts into which they are dissolved are imperceptible to our eyes), then at least remember that bodies can only be divided into these imperceptible particles because they are extended; for if the mind is not extended, it will not be divisible, and if it is not divisible, it must be agreed that in this sense it will not be corruptible. But how could anyone imagine that the mind is extended and divisible? A straight line can be used to cut a square into two triangles, two parallelograms, or two trapeziums; but by what line could a pleasure, a pain, or a desire conceivably be cut, and what figure would result from this division? Certainly I do not believe that the imagination is so stocked with false ideas as to be satisfied with this.

The mind therefore is neither extended nor divisible; it is not susceptible to the same changes as our bodies; nevertheless, it must be agreed that it is not by its nature immutable. If the body is capable of an infinite number of different figures and configurations, the mind is also capable of an infinite number of different perceptions and modifications. Just as after our death the substance of our flesh will be decomposed into earth, vapors, and an infinity of other bodies without being annihilated, so our souls, without returning to nothingness, will have thoughts and sensations very different from those which it has during this life. While we are alive, our body must be composed of flesh and bone; and in order to be alive, our soul must have the ideas and sensations that it has through its relation to the body to which it is united. But when the soul is separated from its body, it will be completely free to receive all kinds of ideas and modifications quite different from those it presently has, as our body for its part will be capable of receiving all sorts of figures and configurations quite different from those it must have to be the body of a living man.

It seems to me that the things I have just said make it sufficiently clear that the immortality of the soul is not such a difficult thing to understand. How does it happen then that so many people doubt it, unless it is because it pleases them not to bring to bear upon them the modest attention needed to be convinced by the arguments that prove it. And what is the cause of their not wanting to bring this attention to bear, unless it is that their wills are disturbed and inconstant, thereby incessantly agitating their understanding, so that the understanding does not have the leisure to perceive distinctly even those ideas that are most present to it, such as those of thought and extension; just as a man excited by some passion, who constantly glances in all directions, usually does not discern those objects closest to him and most easily perceived. For in the end the question of the immortality of the soul is one of the easiest questions to resolve, if, without listening to our imagination, we consider with some mental attention, the clear and distinct idea of extension in order to realize that extension cannot be related to thought.

If the inconstancy and weakness of our will does not permit our understanding to penetrate to the bottom of things immediately present to it and of the utmost importance for us to know, it is easy to judge that it will permit us even less to meditate upon those things removed from us, having no relation to us. Consequently if we are in a state of extreme ignorance concerning most things that it is most necessary for us to know, we will not be very enlightened about those that seem completely vain and useless to us.

It is not really necessary for me to pause here in order to prove this by boring examples not supporting any significant truths, for if there are things of which one ought to be ignorant, they are useless things. Although there are but few people who apply themselves seriously to completely vain and useless things, there are still too many. But there cannot be too many people who ignore and despise such things, provided they do not make judgments about them. It is not a fault of a limited mind not to know certain things; it is only a fault to judge them. Ignorance is a necessary evil, but we can and should avoid error. And so I do not condemn the ignorance of men in very many matters, but only the excessively bold judgments they make about them.

V. That we are extremely ignorant of abstract things, or things having but little relation to us.

When things are closely related to us, when they are sensible and fall under our imagination easily, the mind can be said to apply itself to them and to be able to have some knowledge of them. For when we know that things are related to us, we are inclined to think about them; and when we sense that they affect us, we apply ourselves to them with pleasure. Therefore, we should be wiser than we are with regard to a great many things, were it not for the restlessness and agitation of our will, which ceaselessly troubles and tires our attention.

But when things are abstract and insensible, then even with effort we can hardly have any assured knowledge of them; not because abstract truths are in themselves very puzzling, but because the mind's focus of attention and perception normally begins and ends in the same sensible perception of objects because we think only what we sensibly perceive, and only as long as we sensibly perceive it.

Surely, if the mind could easily apply itself to clear and distinct ideas, without being, as it were, supported by some sensation, and if the restlessness of the will did not unfailingly distract its application, we would not find great difficulties in an infinity of natural questions we now regard as insoluble and we would be able in but a little time to deliver ourselves from ignorance and errors in regard to these questions.

It is, for example, an incontestable truth to every man who uses his mind that creation and annihilation surpass the ordinary forces of nature. If, then, we remained attentive to this pure notion of the mind and reason, we would not admit the creation and annihilation of an infinite number of new beings (such as substantial forms, real qualities and faculties, and so on) with such facility. We would search after the explanation of natural effects in the distinct ideas we have of extension, figure, and motion; and this is not always as difficult as we imagine, for all things in nature are connected with and prove one another.

The effects of fire, like those of cannons and mines, are very startling, and their cause is somewhat hidden. Nevertheless, if instead of adhering to the impressions of their senses and to those of certain false or deluding experiences men would insist strongly upon this single notion of the pure mind, namely, that it is not possible for a body that is only slightly agitated to produce a violent motion in another body since it cannot communicate more speed to the body it strikes than it has in itself, it would be simple to conclude from this alone that there is some subtle and invisible matter that is violently agitated and is generally spread throughout all bodies, and to conclude many other similar things that would enable us to know the nature of fire, and that we could also use to discover many other more hidden truths.

For the two facts (1) that such great motion is produced in a cannon and in a mine and (2) that none of the visible bodies that surround them is in a state of agitation sufficiently great to produce this motion, constitute certain proof that there are other invisible and insensible bodies that have at least as much agitation as the cannon ball, but that, being very subtle and delicate, can by themselves pass freely through the pores of the cannon without rupturing them, before it fires, i.e., as can be found explained at length and with some probability in Descartes,[a] before these more subtle particles have enclosed the hard and coarse particles of saltpeter composing the cannon powder. But when the cannon is fired, i.e., when these very subtle and highly agitated particles have surrounded the coarse and solid parts of the saltpeter and have communicated their strongest and most violent motion to them, then the whole must explode, because the pores of the cannon (which left free passage in every direction to the subtle particles of which we speak when they were alone) are not large enough to give passage to the coarser particles of saltpeter, and to certain other particles of which the powder is composed, once they have received the agitation of the subtle particles that surround them.

For just as the river water running underneath bridges does not disturb them because of the minuteness of its particles, so the subtlest and most delicate matter of which I have just spoken continually passes through the pores of all bodies without causing any sensible changes in them. But yet, just as that river is capable of overturning a bridge when it carries large masses of ice or some other solid bodies in its current, and pushes against the bridge with the very same motion, so the subtle matter is capable of the surprising effects that we see in cannons and mines. The motion of the subtle matter is infinitely more violent and rapid than that of rivers and torrents, and when the matter communicates its motion to the parts of powder floating in it, they cannot pass freely through the pores of the bodies surrounding them because the particles are too large. They therefore rupture these bodies violently to gain free passage for themselves.

[a] *Principles of Philosophy* [4:109–13]. See Elucidation 16 on the generation of fire.

But men cannot very easily represent these subtle and delicate particles to themselves, and they regard them as illusory because they cannot see them. ''Contemplatio fere desinit cum aspectu,'' says Bacon. Even the majority of philosophers would prefer to invent some new entity rather than be silent about things of which they are ignorant. And if one objects against their false and incomprehensible suppositions that fire must be composed of very highly agitated particles because it produces such violent motion, and that a thing cannot communicate what it does not have (which is certainly a very clear and well-founded objection), they never fail to confuse everything by some frivolous and imaginary distinction (such as that between equivocal and univocal causes) in order to appear to say something when in effect they have said nothing. For at bottom it is a common notion among attentive minds that there is no such thing in nature as a true equivocal cause (in the sense they understand it) and that only the ignorance of men has invented them.

Men ought therefore to become more devoted to the consideration of clear and distinct notions if they wish to know nature. They should check and resist the inconstancy and weakness of their wills a bit if they wish to penetrate to the bottom of things, for their minds will always be weak, superficial, and digressive so long as their wills remain frivolous, inconstant, and fickle.

True, it is fatiguing, and it takes some self-control in order to become attentive and to penetrate to the bottom of things we wish to know; but nothing is attained without difficulty. It is shameful that intelligent people and philosophers, who are obliged for very many reasons to search after and defend the truth, speak without knowing what they say, and are content with terms that do not arouse any distinct idea in attentive minds.

BOOK FOUR

Chapter Three

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I. Curiosity is natural and necessary. II. Three rules for controlling curiosity. III. An explanation of the first of these rules.

I. Curiosity is natural and necessary.

So long as men have an inclination for a good that surpasses their strength and that they do not possess, they will always have a secret inclination for anything that seems novel and extraordinary. They will constantly pursue things to which they have given no consideration, in the hope of finding what they search for in them; and since their mind can never be entirely satisfied except through the perception of Him for whom they were made, they will always be in a state of restlessness and agitation until He appears to them in His glory.

This disposition of mind is doubtless very consonant with their state, for it is infinitely better to search restlessly after the truth and the good that we do not possess than to remain in a state of false satisfaction by being content with the illusions and false goods with which we normally feed ourselves. Men should not be insensible to the truth and to their happiness; the new and the extraordinary should arouse them, and curiosity should be permitted, or rather, ought to be recommended to them. Thus, common and ordinary things do not contain the true good; and since the ancient opinions of philosophers are very uncertain, it is fitting that we be curious about new discoveries, and always restless in the enjoyment of ordinary goods.

If a geometer had just given us some new propositions contrary to those of Euclid, if he claimed to prove that this science is full of errors, as Hobbes wanted to do his book *De principii et ratiocinatione Geometrarum . . . contra fastum professorum geometriae,* I admit that one would be mistaken in being pleased by this sort of novelty, because when we have found the truth, we should stick by it firmly, since curiosity is given us only in order to lead us to its discovery. Hence, being curious about new opinions in geometry is not a common fault of geometers. They would be quickly disgusted by a book that contained only propositions contrary to those of Euclid, because, being very certain of the truth of these propositions through incontestible demonstrations, all their curiosity ceases with regard to them. This is an infallible sign that men have an inclination toward novelty only because they have not seen the evidence for the truth of the things they naturally desire to know, and because they do not possess the infinite goods they naturally wish to possess.

II. Three rules for controlling curiosity.

It is therefore fitting that men be excited by novelty and that they love it; but there are nevertheless some exceptions to be made, and men should observe certain rules that are easy to derive from what I have just said, that the inclination toward novelty is given to us only for use in the search after truth and our true good.

There are three of these rules, the first of which is that men must not love novelty in matters of faith, which are not subject to reason.

The second rule is that novelty is not a reason that should lead us to believe that things are good or true, i.e., we should not judge that opinions are true because they are new, nor that goods can satisfy us because they are new and extraordinary, when we have not yet possessed them.

The third rule is that when we are well assured that some truths are so deeply hidden that it is morally impossible to discover them, and that some goods are so slight and insignificant that they cannot satisfy us, we should not allow ourselves to be excited by the novelty we find in them, nor permit ourselves to be seduced by false hopes. But these rules must be explained at greater length, to show that failure to observe them causes us to fall into a great number of errors.

III. A particular explanation of the first of these rules.

One very often finds minds of two very different temperaments. One sort always wishes to believe blindly, while the other always wishes to see clearly. The first, having almost never used their mind, indiscriminately believe whatever is told to them. The others, always wishing to use their minds even in matters that infinitely surpass them, have indiscriminate contempt for all kinds of authorities. The first are normally stupid and weak minds, such as children and women; the others are haughty and libertine ones, such as heretics and philosophers.

It is extremely rare to find people who are exactly in the middle of these two extremes and who never search for evidence in matters of faith by a useless agitation of mind, or who do not sometimes believe false opinions concerning natural things without evidence because of an indiscreet deference and a base submission of mind. If they be pious and very submissive to the authority of the Church, their faith sometimes extends, if I may be permitted to state it this way, over into the realm of purely philosophical views. They often regard these views with the same respect that they give to the truths of religion. They condemn those who do not share their convictions too readily with a false zeal. They entertain injurious suspicions against people who make new discoveries. It is sufficient to be adjudged a libertine, in their minds, to deny that there are substantial forms, that animals feel pain and pleasure, and other philosophical views that they believe to be true without evident reason, only because they imagine necessary connections between these opinions and the truths of the faith.

But if they are too bold, their pride makes them despise the authority of the church, and it is only with difficulty that they submit to it. They are pleased by harsh and presumptuous opinions, they pretend to be freethinkers, and in this state they speak of things divine without respect and with a sort of arrogance. They condemn as too credulous those who speak modestly about certain received views. Lastly, they are extremely prone to doubt everything, and they are completely opposite to those who have too great a facility for submitting to the authority of men.

It is obvious that both extremes are worthless, and that persons who want no evidence in natural questions are reprehensible, just as are those who demand evidence in the mysteries of the faith. But those who place themselves in danger of being mistaken in questions of philosophy by too ready an acceptance are doubtless more excusable than others who place themselves in danger of falling into some heresy by presumptuous doubt. For in the end it is less dangerous to fall into an infinity of philosophical errors for want of studying them than to fall into a single heresy for want of humbly submitting to the authority of the Church.

The mind rests when it finds evidence, and it is agitated when it does not, because evidence is the mark of truth. Hence, the error of skeptics and heretics arises from their doubting that the truth is to be found in the decisions of the Church, because they see no evidence there, and they think that truths of faith can be recognized by evidence.[a] Now, their love for novelty is disordered, because possessing the truth in the faith of the church, they ought no longer to search after it; further, since the truths of the faith are infinitely beyond their minds, they could not discover them even supposing (in accordance with their false thinking) that the church had fallen into error.

But if there are many people who err in refusing to submit to the authority of the Church, there are no fewer who err by submitting to the authority of men. We must submit to the authority of the Church, because she can never err; but it is never necessary to submit blindly to the authority of men, because they can always err. What the Church teaches us is infinitely superior to the power of reason; what men teach us is subject to our reason. Consequently, if it is a crime, and an intolerable conceit, to search for the truth in matters of faith by following our reason with no regard to the authority of the Church, it is also frivolous, and a contemptible meanness of spirit, to blindly believe the authority of men on subjects which depend upon reason.

Nonetheless, most of those we call learned in this world can be said to have acquired this reputation only because they know from memory the opinions of Aristotle, Plato, Epicurus, and some other philosophers, blindly agree with their views, and obstinately defend them. In order to have some degrees and external marks of learning in the universities, it is sufficient to know the views of a few philosophers. Provided one is willing to swear *in verba magistri,* with a bit of memory he soon becomes a doctor. Nearly all communities have a doctrine that is proper to them and that is members are forbidden to give up. What is true for some of them is often false for others. They sometimes glory in upholding the doctrine of their order against all reason and experience, and they believe themselves obliged to twist either the truth or their authors in order to make them agree with one another. This produces an infinite number of frivolous distinctions, which are merely so many detours leading infallibly to error.

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[a] See nos. 13 and 14, *Dialogues on Metaphysics.*

If some truth is discovered, it must be shown that Aristotle saw it; or if Aristotle's opinion is contrary to it, the discovery will be false. Some make this philosopher speak in one way, others in another; for everyone who wants to pass as a learned man makes him speak in their language. There is no absurdity that they will not have him pronounce, and there are few new discoveries that are not mysteriously to be found in some recess of his works. In short, he almost always contradicts himself, if not in his works, then at least in the mouths of those who teach him. For although the philosophers protest and claim merely to teach his doctrine, it is difficult to find two of them in agreement about his views because, in effect, the books of Aristotle are so obscure and filled with terms so vague and general that the opinions of those most opposed to him can be attributed to Aristotle with some plausibility. In certain of his works, one can make him say anything one wishes because, although he makes a great deal of noise, he says nearly nothing, just as children interpret the sound of bells in any way that pleases them because bells make a lot of noise and say nothing.

It is true that it appears very reasonable to focus and fix the mind of man upon particular opinions, in order to prevent it from wandering. But must it be done by falsehood and error? Or rather, do you believe that error can reconcile minds? Let anyone see how rare it is to find intelligent people who are satisfied with the interpretation of Aristotle, and who are persuaded that they have acquired genuine knowledge even after growing old with his books, and he will clearly recognize that only truth and evidence ease the agitation of the mind, and that disputes, aversions, errors, and heresies are even upheld and strengthened by our bad methods of study. The truth is indivisible, it does not vary; and only truth can reconcile minds whereas falsehood and error can but divide and agitate them.

I have no doubt that there are some persons who believe in good faith that he whom they call the *Prince* of Philosophers is never mistaken, and that only in his works do we find the true and solid philosophy. There are people who imagine that in the two thousand years since Aristotle wrote, no one has yet been able to discover that he made a mistake, and that therefore, since he is somehow infallible, they can follow him blindly and quote him as infallible. But we cannot pause here to respond to those people, for they must be in a state of very great ignorance, more worthy of disdain than of refutation. I ask only one thing of them: if they know that Aristotle or any of his followers has ever deduced any truth from principles of physics that are uniquely his, or if perhaps they have done this themselves, that they state it, explain it, and prove it. I will promise them never again to speak of Aristotle except with praise. I shall no longer speak of his principles as useless, since they will finally have been used to prove a truth; but there is little hope for this. This challenge was offered long ago, and Descartes among others, in his metaphysical meditations, has taken it up, even promising to demonstrate the falsity of that alleged truth. And to all appearances, no one will ever hazard to do what the greatest enemies of Descartes and the most zealous defenders of Aristotle's philosophy have not yet dared to undertake.

Let me therefore be permitted after all of this to say that it is blindness, meanness of mind, and stupidity to surrender in this way to the authority of Aristotle, Plato, or any other philosopher, that it is a waste of time to read them when we have no other goal than to remember their opinions, and that it is a waste for those to whom these opinions are taught in this way. Let me say with Saint Augustine that ''a man must be stupidly curious to send his son to school in order to learn the opinions of his teacher.''[a] The philosophers cannot instruct us through their authority, and if they pretend to do so, they are unjust; it is a kind of folly and impiety to swear solemnly to defend them. And finally, to oppose the new opinions of philosophy that may be true, out of <personal> interest, in order to preserve those that are known to be false or useless, is to hold the truth captive unjustly.

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[a] ''Quis tam stulte curiosus est qui filium suum mittat in scholam ut quid magister cogitet discat.'' Aug. *De magistro* [ch. 14].

BOOK FOUR

Chapter Four

Continuation of the same subject: I. Explanation of the second rule of curiosity. II. Explanation of the third.

I. Second rule concerning curiosity.

The second rule that must be observed is that novelty should never be used as a reason for believing that things are true. We have already said several times that men should not be satisfied with error, and in the false goods they enjoy; that it is fitting for them to search after evidence of the truth and the true good they do not possess, and as a result to be led by things extraordinary and novel to them. But for all that, they should never attach themselves to these things, nor believe through some weakness of mind that novel opinions are true simply because they are novel, and that goods are real because they have not yet been experienced. Novelty should only urge men to examine new things carefully; they should not hold these new things in contempt, since they do not know them, nor should they rashly believe they contain what they hope and wish for.

But here is what happens often enough. After having examined ancient and generally held opinions, men do not recognize the light of truth in any of them. After having enjoyed ordinary goods, they do not find in them the solid pleasure that should accompany the possession of the good; their desires and longings are therefore not appeased by ordinary goods and opinions. If we tell them about something novel and extraordinary, then the idea of the novelty immediately makes them hope that this is exactly what they seek; and because men normally flatter themselves and willingly believe that things are as they wish them to be, their hopes are strengthened in proportion as their desires are increased, until in the end they are insensibly changed into imaginary assurances. They then attach the ideas of novelty and truth so closely that the one can never be represented to them without the other; and the more novel always appears to them as truer and better than the more ordinary and common. In this regard they differ very greatly from certain other people who, having joined together the ideas of novelty and falsity (because of an aversion to heresies) imagine that all novel opinions are false and that they contain something dangerous.

We can say then that this ordinary disposition of the mind and heart of men with regard to everything that bears the mark of novelty is one of the most general causes of their errors, for it hardly ever leads them to the truth. When it does, it is only by chance and good fortune, and in the end it always turns them away from their true good by involving them in that multiplicity of diversions and false goods with which the world is filled; and this is the most dangerous error into which we can fall.

II. The third rule of curiosity.

The third rule against excessive desire for novelty is that when we are in addition assured that truths are so hidden that it is morally impossible to discover them, and that the goods are so slight and insignificant that they cannot make us happy, we should not allow their novelty to excite us.

Everyone can know through faith, reason, and experience that all created goods together cannot exhaust the will's infinite capacity. Faith teaches us that all wordly goods are mere vanity, and that our happiness does not consist in honors or in riches. Reason assures us that since it is not in our power to limit our desires, and since we are inclined through a natural inclination to love all goods, we cannot become happy except by possessing Him who contains all goods. Our own experience shows that we are not happy in the possession of the goods we enjoy, since we desire still others.

Finally, we see every day that the great goods which even the most powerful princes and kings enjoy on earth are still incapable of satisfying their desires, that they are even more restless and unhappy than others, and that being, so to speak, on top of the wheel of fortune, they are bound to be infinitely more agitated and shaken by its motion than those lower and nearer the center. For when they fall, it is always from a great height; any wounds they receive are serious; and all that grandeur which accompanies them and which they make a part of their own being only makes them larger and more extended, so that they are capable of a greater number of wounds and are more exposed to the blows of fortune.

Faith, reason, and experience convince us then that earthly goods and pleasures that we have not yet tasted would not make us happy if we possessed them, and that we ought to take great care (according to this third rule) not to let ourselves be stupidly deceived by a vain hope of happiness, which increases little by little in proportion to our passion and desires, and which will be changed in the end into a false assurance. For when we are extremely impassioned in the pursuit of some good, we always imagine it to be very great, and are even imperceptibly convinced that we will be happy when we possess it.

It is necessary then to resist these vain desires, since it would be useless to try and satisfy them; but principally because when we abandon ourselves to our passions and use our time to satisfy them, we lose God and everything else with Him. We only run from one false good to another; we remain always in a state of false hope; we dissipate ourselves; we are agitated in a thousand different ways; we find opposition everywhere because the goods we seek are desired by many and can be possessed by only a few; and finally we die and possess nothing. For, as we are taught by Saint Paul, "Those who wish to become rich fall into the temptation and snare of the Devil, and into various useless and pernicious desires that precipitate men into the abyss of perdition and damnation; for cupidity is the root of all evil."[a]

But if we ought not involve ourselves in searching after terrestrial goods that are new to us, because we are assured that we shall not find in them the happiness we seek, we likewise should not have the least desire for novel opinions on a great number of difficult questions, because we know that the mind of man would be unable to discover their truth. The majority of questions treated in morals and especially in physics are of this nature, and for this reason we should mistrust many of the books composed daily on these most obscure and confusing matters. For although, absolutely speaking, the questions they contain are solvable, nevertheless there have been so few truths discovered as yet, and there are so many more of them to know before coming to those treated in these books, that we cannot read them without risk of great loss.

Yet this is not how men proceed: they do just the opposite. They do not question the possibility of what is told to them. It is only necessary to promise them extraordinary things, such as the restoration of natural heat, *radical moisture, vital* spirits, or other things they do not understand, in order to excite their vain curiosity and preoccupy them. In order to dazzle them and to win them over it is sufficient to propose paradoxes, to use obscure words, impressive terms, or the authority of some unknown authors, or even better, to perform some extraordinary experiment that appeals to the senses, even though it has no relation to the thesis that is advanced; for in the case of such men, to confuse them is to convince them.

If a physician, a surgeon, or an empiric quotes Greek and Latin passages and uses novel and extraordinary terms for his audience, then they are great men. We give them the power of life and death; we believe them as we would oracles; they imagine themselves to be well above common men and believe that they penetrate to the bottom of things; and if someone is so indiscreet as to claim that we cannot take five or six words that signify and prove nothing as an argument, they imagine that he has no common sense and that he is denying first principles. But in effect, the first principles of these people are five or six Latin words of some author (or some Greek passage, if they are more adept).

It is sometimes even necessary for learned medical men to speak a language that their patients do not understand in order to acquire some reputation and to be obeyed.

A doctor who knows only Latin might be highly esteemed in his village, because Latin might as well be Greek or Arabic for the peasant. But if a doctor cannot at least read Greek, in order to learn some aphorism of Hippocrates, he should not expect to pass for a learned man in the eyes of city people, who normally understand Latin. Hence doctors, even the most learned of them, knowing this fancy of men, find themselves obliged to speak as cheats and ignoramuses, and we should not always judge their capacity and good sense by the things that they might say during their visits. If they occasionally speak Greek, it is to charm the sick person and not the illness, for they know very well that a Greek passage has never cured anyone.

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[a] Ch. 6, Tim. [(1), 6:9–10].

BOOK FOUR
Chapter Five

I. The second natural inclination, or self-love, II. Its division into the love of being, and of well-being, or of grandeur and pleasure.

I. The second natural inclination, or self-love.

The second inclination the Author of nature unceasingly impresses on our will is the love of ourselves or of our own preservation.

We have already said that God loves all His works, that it is His love alone that preserves them, and that he wishes all created minds to have the same inclinations toward Him. He therefore wills that they all have a natural inclination for their preservation and for their happiness, because they cannot be happy without existing. Nevertheless, it is not fitting for man to place his final end in himself, and to love himself except in relation to God. Because in fact we do not have any goodness or independent subsistence in and of ourselves; we have no power to make ourselves happy and perfect, and we should love only in relation[a] to God, Who alone can be our sovereign good and make us perfect.

If faith and reason teach us that only God is the sovereign good, and that He alone can fill us with pleasures, we can easily conceive that we should therefore love Him and yield to Him without resisting; but without grace, we always love Him imperfectly and through self-love—I mean here an unjust and disordered self-love. For although we might love Him for having the power to make us happy, we do not love Him as sovereign justice, we do not love Him as He is. We love Him from our point of view as a humanely kind and accommodating God, and we do not wish to conform to His law, to the immutable order of His divine perfections. Pure charity is so far beyond our strength that no matter how hard we try to love God for Himself, or as He is in Himself, human reason does not easily understand that it is possible to love in a way other than in relation to self, and to have a different purpose than its own satisfaction.

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[a] I explain myself more clearly and at greater length in the treatise *De l' Amour de Dieu*, and in the third letter to Fr. Lamy. For here I speak of inclinations only in passing, and to relate the causes of our errors with some order.

II. Self-love is divided into love of being and of well-being, or of grandeur and pleasure.

Self-love can be divided into two species, namely, love of grandeur and love of pleasure; or into the love of one's being, and the perfection of one's being, and into the love of one's well-being or felicity.

Through the love of grandeur we affect power, excellence, independence, and self-subsistence of our being. We desire somehow to have necessary being: in a sense we wish to be like gods. For only God properly has being, and necessarily exists, since everything dependent exists only through the will of Him upon whom they depend. Therefore men, desiring the necessity of their being, also desire the power and independence that will place them beyond the power of others. But by the love of pleasure, they desire not simply being but well-being since pleasure is the mode [*mannière d'être*] of being that is the best and most agreeable to the soul: I say pleasure precisely as pleasure. Consequently, it appears certain to me that pleasure in general, in so far as it contains both rational and sensible pleasures, is the unique motive or principle of natural love or of all the soul's impulses toward any possible good, for one can love only what is pleasing. If the blessed love the divine perfections, God as He is in Himself, it is because the perception of these perfections pleases them. For since man is made to know and love God, it was necessary that the perception of everything perfect should please them.

It must be noted that grandeur, excellence, and independence are not modes that render creatures happier by themselves, since it often happens that one becomes miserable in proportion to the increase in one's grandeur. But as for pleasure, it is a mode we could not receive without actually becoming happier; I do not say permanently happy. Grandeur and independence most often are not in us at all, and they normally consist only in the relations we have to the things around us. But pleasures are in the soul itself, and they are real modes that modify it and that, through their own nature, are capable of satisfying it. Therefore, we regard excellence, grandeur, and independence as proper things for the preservation of our being, and sometimes even as things very useful according to the natural order for the preservation of well-being. But pleasure is always a mode of the mind that by itself makes it happy (and if it is well-founded, makes it perfectly content), so that pleasure is well-being, and the love of pleasure is the love of well-being.

Now this love of well-being is stronger in us than the love of being; and self-love sometimes causes us to desire nonbeing, because we do not have well-being. This happens to all the damned, for whom it would be better, according to the word of Jesus Christ, not to be than to be as evil as they are, because these unhappy people, being declared enemies of Him who contains in Himself all goodness (and who is the sole cause of the pleasures and pains we can feel) cannot enjoy any satisfaction. They are and eternally will be miserable, because their will shall always remain in the same disposition and in the same derangement. Self-love contains two loves then: the love of grandeur, power, independence, and generally of all things that appear to us to contribute to the preservation of our being, and the love of pleasure and of all things necessary for our well-being, i.e., for our happiness and contentment.

These two loves can be divided in many ways either because we are composed of two different parts, body and soul, according to which they may be divided, or because we can distinguish or specify them according to the different objects useful for our preservation. Nevertheless, I shall not pause to discuss this, because my plan is not to produce a moral philosophy, and thus it is not necessary to undertake a study and an exact division of all the things we regard as our goods. It has only been necessary to make this initial division in order to report the causes of our errors with some order.

I shall therefore first speak of the errors caused by our inclination for grandeur and for everything that frees our being from dependence on others. And following this, we shall treat of those errors that arise from our inclination toward pleasure, and toward everything that renders our being as best it can be for us, or that most satisfies us.

BOOK FOUR

Chapter Six

I. The inclination we have toward everything that raises us above others. II. The false judgments of certain pious people. III. The false judgments of the superstitious and of hypocrites. IV. Voët, enemy of Descartes.

I. The inclination we have toward everything that raises us above others.

Everything that gives us a certain elevation over others by making us more perfect, such as science and virtue, or else by giving us a certain authority over them by making us more powerful, such as honors and riches, seems to make us to some extent independent. All those below us revere and fear us; they are always prepared to do what pleases us for our preservation, and they dare not harm us or resist our desires. Hence men always try to possess these advantages that raise them above other men. For they do not consider that their being and their well-being depend, in truth, upon God alone, and not upon men, and that true grandeur, which will make them eternally happy, does not consist in the rank that they hold in the imagination of other men as feeble and as miserable as themselves, but in the honorable rank they have in the divine Reason, in that omnipotent Reason that will eternally render to each according to his works.

But men not only desire actually to possess knowledge and virtue, honors and riches, they exert all their efforts so that people will at least believe they truly possess them. And if it can be said of them that they put themselves to less trouble to appear rich than really to be so, it can also be said that they often take fewer pains to be virtuous than to appear so; for, as the author of the *Moral Reflections* nicely put it, ''Virtue would not go far if vanity did not keep her company.''

The reputation of being rich, learned, and virtuous produces in the imagination of those around us, or who concern us most closely, dispositions that are very advantageous to us. It prostrates them at our feet; it excites them in our favor; it inspires in them all the impulses that tend to the preservation of our being, and to the increase of our grandeur. Therefore, men preserve their reputation as a good that they need in order to live comfortably in the world.

All men therefore have an inclination toward virtue, knowledge, honors, and riches, and for the reputation of possessing these advantages. We shall now show with a few examples how these inclinations can involve us in error. Let us begin with the inclination toward virtue, or toward the appearance of virtue.

People who seriously work to become virtuous utilize their minds and their time almost exclusively in the study of religion and the doing of good works. Like Saint Paul, they only wish to know that Jesus Christ crucified <is> the remedy for the illness and corruption of their nature. They do not desire any other light than that necessary to live as Christians, and to recognize their duties; and afterward they apply themselves only to what fulfills them, with fervor and precision. Hence, they hardly amuse themselves with sciences that appear vain and sterile for their salvation.

II. The false judgments of certain pious people.

We can find nothing to criticize in this conduct; we hold it in infinite esteem, and would be happy to think of ourself as holding exactly to this path, and we repent of not having followed it closely enough. But what cannot be approved is this: it is established that there are purely human sciences, quite certain and quite useful, that detach the mind from sensible things and gradually accustom or prepare it to taste the truths of the Gospel; and yet some people of piety, without having examined them, condemn these sciences too freely as being either useless or uncertain.

It is true that the majority of sciences are very uncertain and quite useless. One would not be greatly mistaken to believe that they contain only truths of little use. It is permissible never to study them, and it would be better to hold them completely in contempt than to allow oneself to be charmed and dazzled by them. Nevertheless, one can be assured that it is very necessary to know certain truths of metaphysics. Knowledge of the universal cause, or of the existence of a God, is absolutely necessary, since even the certainty of the faith depends on the knowledge that reason gives of the existence of a God. We ought to know that it is God's will that creates and rules nature, that the force or power of natural causes is but His will, and in a word, that all things depend upon God in every way.

It is also necessary to know what truth is, the means for distinguishing it from error, the distinction between minds and bodies, the conclusions we can draw from these distinctions, such as the immortality of the soul and many such others we can know with certainty.

The science of man, or of oneself, is a science that cannot reasonably be depreciated. It is filled with an infinity of things absolutely necessary to know in order to have some accuracy and penetration of mind. If it may be said that even a coarse and stupid man is infinitely above matter because he knows that he exists whereas matter does not, then those who know <the nature of> man are very much above coarse and stupid people because they know what they are, whereas the others do not.

But the science of man is not only estimable because it raises us above others; it is even more so because it lowers and humbles us before God. This science makes us perfectly aware of our dependence upon Him in all things, even in our most ordinary actions; it makes manifest to us the corruption of our nature; it disposes us to have recourse to Him who alone can cure us, to attach ourselves to Him, to mistrust ourselves and to look beyond ourselves; It thus disposes the mind in several quite proper ways to submit to the grace of the Gospel.

One can hardly do without at least a crude smattering and a general knowledge of mathematics and nature. Everyone should have learned these sciences in his youth; they detach the mind from sensible things, and they prevent it from becoming soft and effeminate. They are rather useful in life, and they even direct our attention toward God; the knowledge of nature causes this in and of itself, and that of mathematics through the distaste that it inspires in us for the false impressions of our senses.

Virtuous people should not belittle these sciences, or regard them as uncertain or useless, unless they are sure they have studied them sufficiently to make solid judgments about them. There are sufficient numbers of others they can wholeheartedly condemn. Let them readily condemn to the flames the pagan poets and philosophers, the rabbis, certain historians, and a large number of authors who are responsible for the glory and erudition of certain learned men; we will hardly be troubled by it. But let them not condemn the knowledge of nature as being contrary to religion, because since nature is ruled by the will of God, true knowledge of nature causes us to understand and admire the power, grandeur, and wisdom of God. For in the end it seems that God has formed the universe that minds might study it, and that through this study they might be led to the knowledge and worship of its Author. Consequently, those who condemn the study of nature seem to oppose the will of God, were it not for the fact that they claim that since the Fall of Man, his mind is incapable of such study. Neither let them say that the knowledge of man only puffs him up and makes him vain, because those who pass in this world as having a perfect knowledge of man (although often they know very little about him) are normally full of an insupportable pride; for it is obvious that one cannot really know man without feeling his weaknesses and miseries.

III. The false judgments of superstitious and hypocritical people.

Moreover, it is not people of a true and solid piety who normally condemn what they do not understand, but rather those who are superstitious and hypocritical. The superstitious, because of a servile fear, and a baseness and weakness of the mind, are frightened whenever they see some lively and penetrating mind. For example, it is only necessary to give them the natural explanation of thunder and its effects in order to be an atheist in their view. But the hypocrites, by a devilish malice, transform themselves into angels of light. They use the appearances of holy and universally revered truths to oppose, out of special interest, truths that are only slightly known and appreciated. They impugn the truth with the image of truth; and, while sometimes mocking in their hearts what everyone respects, they establish a reputation in the minds of men that is the more solid and fearful, as the thing that they have abused is more holy.

These persons are, therefore, the strongest, most powerful, and most redoubtable enemies of truth. It is true that they are fairly rare, but it only takes a few of them to cause very great evil. The appearance of truth and virtue often does greater harm than truth and virtue themselves do good; for it only takes one adroit hypocrite to upset what many truly wise and virtuous people have constructed with very great pain and labor.

IV. Voët.

Descartes, for example, demonstratively proved the existence of a God, the immortality of our souls, many other metaphysical questions, and a large number of physical ones, and our age is infinitely indebted to him for the truths he has discovered for us. Nevertheless, an insignificant man appears, an ardent and vehement declaimer, respected by people because of the zeal he manifests for their religion, and this person writes books full of insults against Descartes and accuses him of the greatest crimes. Descartes was a Catholic; he studied under the Jesuits, and he often spoke of them with admiration. This was enough to enable this malign spirit to persuade the enemies of our religion (who are easily excitable over matters as delicate as those of religion) that Descartes is an emissary of the Jesuits with dangerous plots, because the slightest appearance of truth in matters of faith has more force upon men's minds than in real and positive truths of physics or metaphysics, to which they have given very little effort. Descartes wrote about the existence of God. And this was enough for this slanderer to exercise his false zeal in order to suppress all the truths defined by his enemy. He accuses him of being an atheist, and even of cunningly and secretly teaching atheism, just like the infamous atheist called *Vanini* who was burned at the stake in Toulouse, who concealed his malice and impiety by writing for the existence of a God. One of the reasons Voët gives to support his claim that his enemy is an atheist is that he wrote against atheists, as *Vanini* did, in order to conceal his impiety.

This is how the truth is suppressed when someone is supported by the appearances of truth and has acquired great authority over feeble minds. Truth loves gentleness and peace, and as strong as she is, she sometimes gives in to the pride and arrogance of a lie adorned and armed with her own appearances. She knows well that error can do nothing against her; and if she sometimes dwells as an exile in obscurity, it is only to await more favorable occasions for coming into the daylight. For in the end the truth nearly always appears stronger and more brilliant than ever, even in the very place she was suppressed.

It is not surprising that an enemy of Descartes, a man of a religion different from his, an ambitious man who dreamed only of raising himself upon the ruins of those above him, a declaimer without judgment, in other words, a *Voët,* speaks with contempt about what he does not understand and does not wish to understand. But we have cause for astonishment when men who are neither enemies of Descartes nor of his religion have accepted the adverse and contemptuous opinions against him because of the insults they have read in books composed by the enemy of his person and his religion.

This heretic's book, entitled *Desperata causa papatûs,* sufficiently shows his impudence, ignorance, enthusiasm, and his desire for appearing zealous in order to acquire some reputation among his own. Thus, he is not a man one should believe on his word. For just as we should not believe all the fables he has amassed in this book against our religion, so also we should not accept on his word the atrocious accusations and insults he has invented against his enemy.

Reasonable men need therefore not allow themselves to be persuaded that Descartes is a dangerous man because they have read this in some book, or because they have heard it said by some people whose piety they respect. It is not permissible to believe men on their word when they accuse others of the greatest crimes. It is not a sufficient reason to believe a thing because it was said by a man who spoke with zeal and gravity; for in the end cannot falsehoods and stupidities be uttered in the same way as good things, especially when the speaker is convinced of them because of simplicity and weakness?

It is easy to determine the truth or falsity of the accusations made against Descartes; his writings are readily available, and quite easy to understand if one is capable of paying attention to them. Let a man read his works then, so that he might have other proofs against him than simple *hearsay;* and I hope that after he has read them and meditated on them, Descartes will no longer be accused of atheism, and that on the contrary he will have all the respect that one should have for a man who has demonstrated in a very simple and evident way not only the existence of a God and the immortality of the soul but also an infinity of other truths that were unknown until his time.

BOOK FOUR

Chapter Seven

The desire for knowledge, and the judgment of counterfeit scholars.

The mind of man doubtless has very little capacity and scope, but nevertheless there is nothing it does not wish to know. All the human sciences cannot content man's desire, yet the capacity of his mind is so restricted that it cannot perfectly comprehend a single particular science. He is continually agitated, and always desires to know, whether because he hopes that he will find what he searches for, as we have noted in the preceding chapters, or because he is persuaded that his soul and mind will be made greater through the vain possession of some extraordinary knowledge. The inordinate desire for his own happiness and grandeur causes him to study all the sciences, hoping to find his happiness in the moral ones, and searching after this false grandeur in the speculative, and in all those vain and exotic sciences that elevate those who possess them in the minds of those ignorant of them.

How is it that there are people who spend their entire lives reading the Rabbis and other corrupt books written in foreign, obscure languages by authors with neither taste nor intelligence, unless it is because they are persuaded that knowing oriental languages places them in a greater and more elevated position than those ignorant of them? And what can support them in their thankless, disagreeable, difficult, and useless work if it is not the hope of some elevation and the sight of some vain grandeur? Indeed, we look at them as rare men; we compliment them on their profound erudition; we listen to them more willingly than to others; and although it can be said that they are usually the least judicious of men (as would be the case if only because they spend their entire lives in such a useless task, which can make them neither wiser nor happier), nevertheless they are imagined to be more intelligent and judicious than other people. Because they are more knowledgeable about the origin of words, we let ourselves be persuaded that they are learned in the nature of things.

It is for the same reason that astronomers spend their time and wealth to get a precise knowledge of what is not only useless but impossible to know. They hope to find in the paths of the planets an exact regularity that simply is not to be found there, and to formulate astronomical tables in order to predict effects of whose causes they are ignorant. They have composed a *Selenography*, or geography of the moon, as if men planned to travel there. And they have already divided up this planet among the illustrious of astronomy; there are few of these illustrious scholars who do not have some province in this country as a reward for their great labors, and I do not doubt that they take some pride in having been in the good graces of him who distributed these realms among them so magnificently.

How is it that reasonable men apply themselves so vigorously to this science, while remaining in the grossest errors with regard to truths very useful for them to know, unless it is that knowledge of what happens in the heavens seems to them to be something grand? Knowledge of the slightest thing that happens above us seems to them more noble, more sublime, and more worthy of the greatness of their minds than the knowledge of vile, abject, and corruptible things, which, in their opinion, all sublunary bodies are. The nobility of a science derives from the nobility of its object; this is a great principle! The knowledge of the motion of unchangeable and incorruptible bodies is therefore the highest and most sublime of all sciences. Therefore, it appears worthy to them of the greatness and excellence of their mind.

Thus it is that men permit themselves to be dazzled by a false idea of grandeur that flatters and excites them. As soon as their imagination is struck by it, it bows down before this phantom; it reveres this phantom while overthrowing and blinding reason, which ought to judge such matters. It seems that men are in a dream when they judge the object of their passion, and that they are lacking in common sense. For in the end, what is there that is so grand about the knowledge of planetary motion, and do we not already know enough about it in order to regulate our months and years? Why do we make so much of knowing whether Saturn is surrounded by a ring, or by many small moons, and why take sides on the issue? Why glorify ourself for having predicted the size of an eclipse when the accuracy of our prediction might have been due to luck? There are people designated by the order of a prince to observe the stars; let us content ourselves with their observations. They apply themselves to this work with good reason, for they do their duty in so doing: it is their occupation. They achieve success in it, for they work at it ceaselessly with art, industry, and with all possible precision; nothing is denied them in their efforts. Thus, when they make us party to their discoveries, we should be completely satisfied about a matter that so little concerns us.

It is good that many apply themselves to the study of anatomy, because it is extremely useful and because the knowledge to which we ought to aspire is that which is the most useful to us. We can and we should apply ourselves to what contributes something to our happiness or rather to the easing of our infirmities and miseries. But to spend whole nights hanging from a telescope in order to discover some spot or some new planet in the sky, to ruin one's health and lose one's wealth and abandon the demands of our businesses in order to pay regular visits to the stars, and to measure their size and positions, seems to me to completely forget what man is presently, and what he will one day be.

And let no one say that this is to recognize the grandeur of Him who has made all these great objects. The smallest fly better manifests the power and wisdom of

God to those who will consider it with attention, and without being prejudiced by its size, than everything the astronomers know about the heavens. Yet men are not made to spend their lives studying flies and insects; and we do not highly approve the trouble certain persons have taken to inform us of how the lice of each species of animal are made, and how different worms are changed into flies and butterflies. We might divert ourselves with this for lack of something better to do, but unless they are insensible to their miseries, men should not spend all their time in such pursuits.

They should continually apply themselves to learning about God and themselves, to working seriously to rid themselves of their errors and prejudices, their passions and their inclination toward sin, to arduously searching after the truths most necessary to them. For in the end the most judicious people are those who most carefully search after the most solid truths.

The major cause that engages men in false ideas is that they have attached the idea of learning to these vain and fruitless studies instead of to solid and necessary sciences. For when a man takes it into his head to become learned, and the spirit of polymathy begins to excite him, he hardly ever examines which among the sciences are the most necessary to him, either for conducting himself as an honest man or for perfecting his reason; he only looks at those accepted as learned in the world, and at whatever they have in them that makes them worthy of consideration. Since all the most solid and most necessary sciences are rather common, they bring neither admiration nor respect to those who possess them; for people regard common things without attention and emotion, however beautiful and admirable they may be in themselves. Those who wish to become learned hardly pause, therefore, to study the sciences necessary to the conduct of life and the perfection of the mind. This is because these sciences do not evoke in them the idea of the sciences that they have formed, because they are not the ones they have admired in others and that they hope others will admire in them.

Knowledge of the Gospel and morality are too common and ordinary for them. Their hope is to understand the criticism of certain terms found in the ancient philosophers or in the Greek poets. Languages, and especially those not used in their countries, such as Arabic and the language of the rabbinate, or the like, appear to them worthy of their dedication and study. If they read Sacred Scripture, it is not in order to learn religion and piety; points of chronology, geography, and the difficulties of grammar completely occupy them; they desire the knowledge of these things with greater ardor than they do the knowledge of the salutary truths of the Gospel. They want to possess in themselves the science that they have foolishly admired in others, so that the foolish will not fail to admire it in them.

Likewise with regard to the knowledge of nature, they rarely search after the most useful, but rather the least common. Anatomy is too lowly for them, whereas astronomy is more exalted. Ordinary experiments are little worthy of their application, but these rare and surprising experiments, which can never enlighten the mind, they observe with the greatest care.

The rarest and most ancient histories are the ones that they glory in knowing. They do not know the genealogy of currently reigning princes, but they carefully research those of men who have been dead for four thousand years. They neglect to learn the most common histories of their own time, but they seek a perfect understanding of the fables and fictions of poets. They do not even know their own relatives, but if you wish, they will present many authorities to prove that some Roman citizen was allied with some emperor, and other such things.

They hardly know the names of ordinary garments used in their own times, but they amuse themselves in finding out the names of those used by the Greeks and Romans. The animals of their own countries are hardly known to them, yet they have no fear in taking many years to compose great volumes about the animals of the Bible, in order to appear better than others at having divined what unknown terms signify. Such a book delights its author and the scholars who read it, because being laced with Greek, Hebrew, Arabic, etc., passages and quotations from the rabbis, and other rare and obscure authors, it satisfies the vanity of its author and the silly curiosity of those who will fancy themselves more learned than others when they can proudly say that there are six different words in the Scripture signifying a lion, or some such thing.

The map of their country, or even of their own city, is often unknown to them, but they are studying the maps of ancient Greece, Italy, Gaul during the time of Julius Caesar, or the streets and public places of ancient Rome. ''Labor stultorum,'' says the Sage, ''affliget eos, qui nesciunt in urbem pergere'' [Eccl. 10:15]: they do not know the way to their city, and they tire themselves foolishly in useless inquiries. They know neither the laws nor the customs of the place where they live, but they carefully study ancient law, the laws of the Twelve Tables, the customs of the Lacedaemonians, or of the Chinese, or the ordinances of the great Mogol. In short they want to know all rare things, all the extraordinary and irrelevant things, that others do not know, because through a subversion of the mind, they have attached the idea of learning to these things, and because it is sufficient to be esteemed as learned to know what others do not know, even when one is ignorant of the most necessary and beautiful truths. It is true that the knowledge of all these and other similar things is called science, erudition, and knowledge; usage will have it so; but there is a science according to Scripture that is nothing but folly and stupidity: ''Doctrina stultorum fatuitas'' [Prov. 16:22]. I have not yet noticed that the Holy Spirit, who praises science so much in the holy writings, says anything on behalf of this false science of which I have just spoken.

BOOK FOUR

Chapter Eight

I. The desire to appear learned. II. The discourse of counterfeit scholars. III. Their works.

I. The desire to appear learned.

If the inordinate desire to become learned often makes men more ignorant, the desire to appear learned not only makes them more ignorant but seems to subvert their reason. For there are an infinity of people who lose their common sense because they wish to surpass it, and who utter nothing but stupidities because they wish to speak only in paradoxes. They deviate so far from all common thinking in their plan for acquiring the quality of a rare and extraordinary mind that indeed they succeed, and are no longer noticed, or are regarded either with admiration or with very much contempt.

They are sometimes regarded with admiration when, being elevated by some high office that covers them, they are imagined to be above other people as much because of their genius and learning as because of their rank or birth. But when they are closely studied and when their grandeur does not hide them from the eyes of others, they are most often regarded with contempt, and sometimes are even looked upon as fools.

Counterfeit scholars manifestly exhibit themselves as such in the books they write and in their ordinary conversations. Perhaps it may be appropriate to say something of them.

II. The discourse of counterfeit scholars.

Since it is vanity and the desire to appear greater than others that motivates <counterfeit scholars> to study, no sooner do they take part in conversation <than> the passion and the desire for advancement is reawakened in them and carries them away. They suddenly fly so high that almost everyone loses them from sight, and often they themselves do not know where they are. They are so fearful of not being above all those who listen to them that they are angered even when followed, infuriated when anyone asks them for some clarification, and even take on a proud air in the face of the slightest disagreement. In short, they say things so novel and extraordinary, but so far removed from common sense, that the wisest men have difficulty not laughing, whereas others are simply dumbfounded by them.

After their initial assualt, if there is some mind strong and firm enough not to have been upset who shows them that they are wrong, they nonetheless remain stubbornly attached to their errors. The air of those whom they have confused confuses them; the aftereffect of seeing the approval their impression has elicited is that they themselves are convinced; or, if this sight does not convince them, it at least infuses them with enough courage to uphold their false views. Vanity does not permit them to retract their words. They always look for some argument by which to defend themselves; they never speak with more ardor and conviction than when they have nothing to say; with each argument that is brought against them, they imagine that they have been insulted and that someone is trying to belittle them; and the stronger and more judicious these arguments are, the more it irritates their aversion and pride.

The best way to defend the truth against them is not to argue, for in the end it is better for both them and us to leave them in their errors than to excite their hatred. Their heart must not be wounded when we wish to heal their minds, since the wounds of the heart are more dangerous than those of the mind. Besides, it sometimes happens that we must deal with a truly learned man whom we might despise for lack of understanding his thinking. <Because of this> it is essential to ask those who speak with authority to explain themselves as distinctly as they can, without permitting them to change the topic or to use obscure and equivocal terms; and if they are enlightened, we shall learn something with them. But if they are counterfeit scholars, they will shortly be confounded by their own words, and they will have no one to blame for it but themselves. We may receive some instruction and even some entertainment from this, if it is permissible to be entertained by the weakness of others when we are trying to cure it. But what is more important is that by doing this we shall prevent the weak who listen to them admiringly from submitting to error by following their decisions.

For it must be carefully noted that since the number of fools, or those who allow themselves to be mechanically led by sensible impressions, is infinitely greater than those who have some breadth of mind and who are only convinced by reason, when one of these counterfeit scholars speaks and pronounces on something, there are always very many more people who take him at his word than there are those who distrust him. But, because these false scholars remove themselves as far as they can from common thinking, as much because of the desire to find some opponent to mistreat in order to elevate themselves and to appear <learned> as because of a perverse mind or a spirit of contradiction, their pronouncements are usually false or obscure, and it is quite rare for anyone to listen to them without falling into some error.

Now, this method for discovering the errors of others, or the solidity of their views, is quite difficult to put into practice. The reason is that counterfeit scholars are not the only ones who want to appear to know everything. Almost all men have this fault, especially those who have done some reading and studying, which makes them always want to discuss and to explain their views without paying enough attention to completely understand those of others. The most accomodating and reasonable among them, secretly despising the views of others, merely show a superficial attentiveness, while we can see in their eyes that they think the complete opposite of what is being said to them, and that they are only concerned with what they want to prove to us, without bothering to reply to our questions. This often makes conversations with them very disagreeable; for just as there is nothing more pleasing and nothing that would do us more honor than for a man to accept our arguments and approve our opinions, so there is nothing so offensive as to see that someone does not understand them, and does not even care to understand them. For at bottom there is no pleasure in conversing with statues, who are only statues in our eyes because they are men who do not have much respect for us, who do not care whether they please us, and are only concerned with their own cause. But if men would learn to listen and answer well, conversations would not only be very agreeable, but even very useful: whereas when everyone tries to appear learned, we only succeed in becoming swellheaded and in disputing without understanding; charity is sometimes offended, and truth nearly never discovered.

But the aberrations into which false scholars fall in their conversations are in some respects excusable. It can be said on their behalf that normally little attention is paid to what is said on these occasions; but the most precise individuals often utter stupidities, and they do not intend that all their words be gathered into a collection, such as was done with those of Scaliger and Cardinal Perron.

There is something to these excuses, and one wants to believe that these sorts of faults deserve a certain indulgence. All of us want to take part in conversation, but there are unfortunate days on which we do it badly. We are not always in the proper humor to think and speak carefully, and time is so brief in certain encounters that the slightest cloudiness or inattention unfortunately makes even the most precise and penetrating minds fall into extravagant absurdities.

But if the mistakes the falsely learned commit in conversations are excusable, the faults they fall into in their books, after having seriously thought about them, are not pardonable, especially if they are frequent, and if they are not balanced by some good things. For after all, when one composes a mischievous book, one is the cause of wasted time for many people while they read it, and is responsible for their often falling into the same errors he has fallen into, and for their deducing many others from them, which is no small harm.

But, although it be a greater fault than one imagines to write a mischievous book, or simply a useless one, it is a fault for which these authors are more frequently rewarded than punished; for there are crimes men do not punish, either because they are in fashion, or because men do not usually have a sufficiently good case for condemning criminals whom they esteem more than they do themselves.

We usually look upon authors as rare and extraordinary individuals, very much superior to others; and we therefore revere rather than punish and despise them. Thus, there is hardly any chance that men will ever set up a tribunal for examining and condemning all the books that do nothing but corrupt reason.

This is why we ought never to hope that the Republic of Letters will be better governed than other republics, since it is always composed of men. It is even quite appropriate, in order that we might deliver ourselves from errors, that there be more liberty in the Republic of Letters than in others where novelty is always very dangerous. For to deprive scholarly men of their liberty, and to condemn all novelties indiscriminately, would be to confirm ourselves in our present errors.

You should not therefore find it a matter for criticism if I speak against the government of the Republic of Letters, and if I try to show that often these great men who are the admiration of others for their profound erudition are at bottom only vain and haughty men, without judgment and without any true science. I am obliged to speak of them in this manner so that people will not blindly yield to their pronouncements, and will not follow their mistakes.

III. The books of counterfeit scholars.

The proofs of their vanity, lack of judgment, and ignorance can be clearly drawn from their works; for if we take the trouble to examine them in order to judge them according to the light of common sense, and without any prejudicial esteem for these authors, we will find that most of the plans of their studies are formed by an injudicious vanity, and that their principal end is not to perfect their reason, and still less to regulate the impulses of their heart, but only to dazzle other people and to appear more learned than they.

In view of this they treat (as we have already said) only rare and extraordinary subjects, and this is also why they couch all their explanations in rare and extraordinary terms, and quote only rare and extraordinary authors. They hardly ever write in their own language because it is too common; nor in simple, clear, and easy Latin; it is not for the purpose of being understood that they speak, but simply for speaking itself, in order to be admired. They rarely apply themselves to subjects that might be useful in the conduct of life, for this seems too common to them; what they seek is not to be useful either to others or to themselves, but only to be esteemed as learned; they do not offer arguments in support of the things that they advance, or, if they do offer them, they are mysterious and incomprehensible arguments that neither they nor anyone else can conceive with clarity; they have no clear arguments; but if they did, they would not state them. These arguments do not astonish the mind, they seem too simple and too common, and everyone is capable of <understanding> them. Rather, they produce authorities in order to prove, or to seem to prove, their thoughts, for often the authorities whom they use do not prove anything through any sense which they contain; they only prove because they are in Greek or Arabic. But perhaps it would be appropriate to speak of their quotations, which will enable us to understand to some extent the disposition of their mind.

It seems to me evident that only a false erudition and the spirit of polymathy could explain the fashion these quotations have had and continue to have among some scholars. For it is not very difficult to find authors who quote long passages at every opportunity with no justification: either because the things they propose are so clear that none could doubt them, or because they are so obscure that the authority of their authors cannot prove them, since they could know nothing about them, or finally because the quotations they advance are irrelevant to what they say.

It is contrary to common sense to produce some lengthy Greek passage to prove that the atmosphere is transparent, because this is something everyone knows; or to use the authority of Aristotle to have us believe there are intelligences that move the heavens, because it is obvious that Aristotle could not have known anything about them; or to mix foreign tongues, Arabic and Persian proverbs in French or Latin books written for everyone, because these quotations cannot be an adornment in such a context, or else if they are so used, they are so bizarre that they shock a very large number of people while satisfying few.

Nevertheless, the majority of those who want to seem learned are so thoroughly pleased with these sorts of quotations that they sometimes have no shame in relating them in languages that even they themselves do not understand, and they make great efforts to sew into their works an Arabic passage that they sometimes do not know how to read. Thus do they greatly burden themselves to reach an end that is contrary to good sense, but that satisfies their vanity and makes foolish people esteem them.

Another of their very considerable defects is that they take very little care to appear to have read with choice and discrimination. They only want to appear to have read a great deal, and especially obscure works, in order to be thought more learned. They want us to believe that they have read rare and expensive books so that we will believe they have missed nothing—deceptive and impious books that honest people do not dare to read, for much the same motives as men who brag that they have committed crimes that others dare not commit. Hence they would rather cite very expensive, rare, ancient, and obscure books than others that are more common and more intelligible—works in astrology, cabala, and magic—than good books, as though they did not see that since reading is the same as conversation, they should want to appear to have carefully sought to read good books, the most intelligible books, and not those that are mischievous and obscure.

For just as it is a perversion of the mind to search out people whom one cannot understand without an interpreter for the purposes of ordinary conversation when one can gather their information in some other way, so it is ridiculous to read only those books we cannot understand without a dictionary when we can learn the same things in books that are more intelligible to us. And just as it is a mark of disorder to affect the company and the conversation of impious people, so it is also the mark of a corrupted heart to find pleasure in reading evil books. But it is a sign of an extravagant pride to want to appear to have read these books even when one has not read them (which nevertheless very often happens); for there are people thirty years of age who quote more evil books for you in their works than they could have read in several centuries, and nevertheless they hope to convince others that they have read them very closely. But most books of certain scholars are fabricated only with the help of dictionaries, and they have hardly read the indexes of the books they quote and some commonplaces gathered together from different authors.

We would not dare enter into greater detail in these matters, or give examples of them, for fear of shocking people as proud and bilious as are these counterfeit scholars, for we take no pleasure in being insulted in Greek and Arabic. Besides, it is not necessary to give particular proofs of what I say in order to make it more intuitive because the mind of man is sufficiently capable of finding the grounds for criticism of the conduct of others and of making practical applications of what I have just said. Meanwhile, let them be nourished as they wish by this vain phantom of greatness, and let them give one another the applause we deny them. For we may already have bothered them too much about a pleasure that seems so sweet and agreeable to them.

BOOK FOUR
Chapter Nine

How our inclination for honors and riches leads to error.

Honors and riches as well as virtue and the sciences of which we have just spoken are the principal things that raise us above other men, for it seems that our being is enlarged and becomes independent through the possession of these advantages. Consequently, the love we have of ourselves naturally reaches out to include honors and riches. It can be said that there is no one who does not have some inclination, great or small, toward these things. We will explain in a few words how these inclinations prevent us from finding the truth and involve us in falsehood and error.

We have shown in many places that a great deal of time and trouble, of diligence and application of mind, is required in order to penetrate complex truths, which are surrounded with difficulties and which depend upon very many principles. From this it is easy to judge that people in public life who are in important positions, who have many assets to control and great affairs to conduct, and who ardently desire honors and riches, are hardly suited to search after these truths, and that they often fall into error with regard to the difficult things they wish to judge.

1. Because they have little time for the search after the truth.

2. Because they normally take little pleasure in this search.

3. Because they are incapable of very great concentration, because the capacity of their minds is divided by the large number of ideas of things they want, and with which they are occupied even in spite of themselves.

4. Because they imagine they know everything and can hardly believe that people who are their inferiors might be more correct than they: they may allow these inferiors to teach them some facts, but they will not willingly allow themselves to be instructed in solid and necessary truths by them, and they are enraged when anyone contradicts or corrects them.

5. Because people are accustomed to applauding them in all their imaginings, however false and far removed from common sense they may be, and to ridiculing those who, even if they are defending incontestable truths, do not share their opinions. And it is because of the craven flattery of those who surround them that

they become confirmed in their errors and their false self-esteem, and dare to judge cavalierly about everything.

6. Because they are hardly concerned with anything but sensible notions, which are more appropriate to ordinary conversations and for preserving the esteem of men than are the mind's pure and abstract ideas, which are used in the discovery of truth.

7. Because those who aspire to some honor try as much as they can to accommodate themselves to the views of others, because there is nothing that so strongly excites the envy and dislike of men than appearing to have slightly uncommon views. It is rare that those whose minds and hearts are occupied with the thought and desire of success can discover hidden truths; but when they do discover them, they often abandon them out of self-interest, and because the defense of these truths does not agree with their ambition. It is often necessary to consent to injustice to become a magistrate; a solid and uncommon piety often keeps one from benefices, and a generous love for truth often loses men the chairs from which only truth should be taught.

All these reasons taken together cause men whose honors, nobility, and riches raise them above others, or who think of nothing but promotion and success, to be extremely subject to error and but little capable of discovering truths that are slightly hidden. For among the things necessary to avoid error in questions of some difficulty, there are two main ones that are not very often encountered in the kind of person I speak of, to wit, the concentration of mind to penetrate to the bottom of things, and the restraint not to judge these things too preciptiously. Even those who are chosen to teach others, and who should have no other purpose than to prepare themselves to teach those committed to their care, usually become subject to error as soon as they enter public life either because, having little time to themselves, they are incapable of concentration and of applying themselves to things that demand very much of them, or because, greatly desiring to appear learned, they boldly pronounce on all matters without reservation, and hardly suffer anyone to resist them or instruct them.

BOOK FOUR
Chapter Ten

The love of pleasure in relation to morality. I. We must avoid pleasure even though it makes us happy. II. Pleasure should not lead us to the love of sensible goods.

We have just spoken in the three preceding chapters of our inclination for the preservation of our being, and of how this is the cause of our falling into many errors. We shall now discuss the inclination we have for well-being, i.e., for pleasures and for all things that make us happier and more content. And we shall try to discover the errors to which this inclination gives rise.

There are philosophers who try to persuade men that pleasure is not a good and that pain is not an evil; that we can be happy in the midst of the most violent pains and miserable in the midst of the greatest pleasure. Since these philosophers are quite moving and very imaginative, they immediately arouse weak minds and those who allow themselves to be impressed by what they hear; for Stoics are rather visionary, and visionaries are passionate. Hence they easily impress upon others the false view with which they themselves are prejudiced. But as there is no conviction contrary to our experience and our inner sensation, all these pompous and magnificent arguments that distract and confuse men's imagination vanish with all their brilliance as soon as the soul is affected by some sensible pleasure or pain. And those who have placed their confidence in this false persuasion of their mind find themselves with neither wisdom nor strength in the face of the slightest attack by vice; they feel themselves deceived and conquered.

I. We must avoid pleasure, even though it makes us happy.

If philosophers cannot give their disciples the strength to conquer their passions, at least they ought not to seduce them, or persuade them that they have no enemies to fight. One must describe things as they are: pleasure is always a good, and pain always an evil; but it is not always advantageous to enjoy pleasure, and it is sometimes advantageous to suffer pain.

But in order to understand what I mean, we must know:

1. That only God is sufficiently powerful to act in us, and to make us feel pleasure or pain. For it is obvious to every man who consults his reason and who

scorns the reports of his senses that it is not the objects of sense that act effectively in us, since body cannot act upon mind; neither does our soul cause its pleasure and pain in itself upon the occasion of objects, for if the suffering of pain were dependent upon the soul, it would never suffer pain.

2. That ordinarily a good should be given only to cause some good action or to reward it, and pain should ordinarily be given only to deter some wrong action or to punish it. And therefore, since God always acts with order, and according to the rules of justice, all pleasure in His institution inclines us toward some right action or rewards us for it, and all pain deters us from some wrong action or punishes us for it.

3. That there are actions which are right in one sense and wrong in another. It is, for example, a wrong action to expose oneself to death when God forbids it; but to do so is also a right action when God commands it, for all our actions are right or wrong only because God commands or prohibits them either by the eternal law, which every rational man can consult though introspection, or by the written law, exposed to the senses of sensible and carnal man, who, since the sin, is not always able to consult reason.

I say then that pleasure is always good, but that it is not always advantageous to enjoy it.

1. Because instead of attaching us to Him who alone is capable of causing pleasure in us, it separates us from Him and unites us with what seems, falsely, to cause it; it takes us away from God to unite us with a vile creature. It is always to our advantage to enjoy pleasure that is related to its true cause, and that is the perception of the true cause. For as one can only love what one perceives, this pleasure can only excite a just love, the love of the true cause of happiness. But it is at the least very dangerous to enjoy pleasures related to sensible objects, which are the perception of them, because these pleasures incline us to love that is not the cause of our actual happiness. For although those who are enlightened by the true philosophy sometimes think that pleasure is not caused by external objects, and although this knowledge can to some extent lead them to recognize and love God in all things, nevertheless, since his sin the rational part of man is so feeble, and his senses and imagination have so much power over his mind, that they soon corrupt his heart if he does not deprive himself, according to the counsel of the Gospel, of all things that do not of themselves lead to God. For the best philosophy could not cure the mind, or resist the disorders of pleasure.

2. Because pleasure is a reward, it is an act of injustice for us to produce movements in our body that oblige God, as a result of the general laws He has established, to make us feel pleasure when we do not deserve it, either because the action we perform is useless or criminal, or because, being full of sin, we should not ask God to reward us. Before his sin man could, with justice, partake of sensible pleasures in his ordered actions. But since the sin, there are no more completely innocent pleasures, or pleasures which are incapable of harming us when we enjoy them, for often we can become enslaved by them just by enjoying them.

3. Because God is just, He cannot help but one day punish the violence we do Him when we oblige Him to give us pleasure as a reward for the criminal actions

we commit against Him. When our souls are no longer joined to our bodies, God will no longer have the self-imposed obligation of giving us sensations that must correspond to brain traces, whereas He will always have the obligation of satisfying His justice. And so this will be the time of His vengeance and anger. He will punish the unjust pleasures of the voluptuous with pains that will never end.

4. Because the certainty we have in this life that this justice will be achieved excites the mind with mortal anxieties and throws it into a sort of despair that makes the voluptuous miserable even in the midst of the greatest pleasures.

5. Because an uneasy remorse nearly always accompanies the most innocent pleasures, because we are sufficiently convinced that we do not deserve them, and this remorse deprives us of a certain inner joy that we find even in the pain of penitence.

Therefore, although pleasure is a good, it must be agreed for all these reasons that it is not always to our advantage to enjoy it. And for other similar reasons very useful to know, and quite easy to deduce from these, it is nearly always very advantageous to suffer pain, though it be in actuality an evil.

Nevertheless, every pleasure is a good and in fact makes him who enjoys it happy at the instant he enjoys it and for as long as he enjoys it; and every pain is an evil and in fact makes him who suffers it unhappy at the instant he suffers it, and for as long as he suffers it. It can be said that without the hope and foretaste of promised goods the just and the saints would be the unhappiest of all men in this life, and the most deserving of compassion. "Si in vita tantum in Christo speramus, miserabiliores sumus omnibus hominibus," says Saint Paul.[a] For those who weep and suffer persecution for justice are happy not because they suffer for justice but because the kingdom of heaven is theirs, and because a great reward is reserved for them in heaven, i.e., because they will be happy some day. Those who suffer persecution for justice are in so doing just, virtuous, and perfect; for they are in the order of God, and perfection consists in following this order. But they are not happy because they suffer. One day they will suffer no more, and then they will be happy as well as just and perfect.[b] "Omnes boni et sancti," says Saint Augustine, "etiam in tormentis quibuslibet divino fulti adjutorio, SPE ILLIUS FINIS beati vocantur, QUO FINE BEATI ERUNT. Nam si in eisdem tormentis, et atrocissimis doloribus semper essent cum QUIBUSLIBET VIRTUTIBUS, eos esse miseros nulla SANA RATIO dubitaret."

However, I do not deny that the just in this life may be happy to some extent because of the strength of their hope and faith, which renders these future goods as present to their minds. For it is certain that when the hope of some good is strong and lively, the good is brought closer to the mind and causes the mind to enjoy it; thus the good makes the mind happy to some extent, since it is the enjoyment of good, the possession of good, pleasure, that makes us happy.

It is therefore not necessary to tell men that sensible pleasures are not good, and that they do not make those who enjoy them happy, because this is not true, and at the time of temptation they recognize this to their misfortune. They must be told that although these pleasures are good in themselves and capable of making them happy in some respects, they should nevertheless avoid them for reasons similar to those I have brought forward. But they should be advised that they cannot avoid them through their own strength, because they desire to be happy through an inclination they cannot conquer, which these passing pleasures they must avoid in some way satisfy. Thus, they are certainly doomed unless rescued by the delight of grace, which counterbalances the continual pull of sensible pleasures. They must be told these things in order that they be distinctly aware of their weakness and of their need for a liberator.

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[a] Cor. [(1)15:19].

[b] *Epist. ad Macedonim* 155, alias 52.

We must speak to men as Jesus Christ did and not as the Stoics, who knew neither the nature nor the malady of the human mind. Men must be told unceasingly that it is in a sense essential for them to hate and despise themselves, and that they must not search for settlement and happiness here below; that they must carry their cross, or the instrument of their supplication, every day, and presently lose their life in order to preserve it eternally. Finally they must be shown that they are obliged to act in a manner completely contrary to their desires, so that they may feel their impotence for good. For men invincibly want to be happy, and one cannot be actually happy if one does not do what one wills. Perhaps being aware of their present evils, and knowing their future ones, they will humble themselves on earth. Perhaps they will cry to heaven, seek a mediator, fear sensible objects, and have a salutary horror of everything that flatters the senses and concupiscence. Perhaps they will thereby enter into that spirit of prayer and penitence so necessary for obtaining grace, without which no strength, no health, no salvation is to be expected.

II. Pleasure should not lead us to the love of sensible goods.

We are inwardly convinced that pleasure is good, and this inner conviction is not false, for pleasure is indeed good. We are naturally convinced that pleasure is the mark of good, and this natural conviction is certainly true, for whatever causes pleasure is certainly quite good and worthy of love.

But we are not convinced that sensible objects, or even our souls, are capable of producing pleasure in us; for there is no reason to believe this, and there are a thousand reasons for not believing it. Hence sensible objects are not good, they are not worthy of love. If they are useful for the preservation of life, we should use them; but as they are not capable of acting in us, we should not love them. The soul should love only what is good to it, what is capable of making it happier and more perfect. It should therefore love only what is superior to it, for it is obvious that it can derive its perfection only from what is superior to it.

But because we judge that a thing is the cause of some effect when it always accompanies it, we imagine that sensible objects act in us, because at their approach we have new sensations, and because we do not see Him who truly causes them in us. We taste a fruit and at the same time we sense sweetness; then we attribute this sweetness to the fruit; we judge that it causes it, and even that it contains it. We do not see God as we see and touch this fruit; we do not even think of Him, nor perhaps of ourselves. Hence we do not judge that God is the true cause of this sweetness, nor that this sweetness is a modification of our soul; we attribute both the cause and the effect to the fruit we eat.

What I have said of sensations related to the body should also be understood of those which have no relation to it, such as are encountered in pure intelligences.

When a mind considers itself, it sees that nothing is wanting for its happiness and perfection or it sees that it does not have what it desires. At the sight of its happiness, it feels joy, and at the sight of its unhappiness, sadness. It immediately imagines that it is the perception of its happiness that produces this joy in it because this sensation always accompanies this perception. It also imagines that it is the perception of its unhappiness that produces this sensation of sadness in it because this sensation follows the perception. The true cause of these sensations, which is God alone, does not appear to it; the mind does not even think of God, for God acts in us without our being aware of it.

God rewards us with a feeling of joy when we know we are in a state we ought to be in, so that we will remain in it, so that our anxiety will cease, and so that we may fully enjoy our happiness without leaving any other thing to take up the capacity of our mind. But He produces a feeling of sadness in us when we are aware that we are not in the state we ought to be in so that we will not remain in that state, and so that we will anxiously seek out the perfection we lack. For God continually urges us toward the good when we know we do not possess it; and He stops us there when we see that we possess it fully. Hence it seems clear to me that neither intellectual feelings of joy and sadness nor sensible feelings of joy and sorrow are voluntary productions of the mind.

Thus, our reason should constantly recognize this invisible hand that fills us with goods, and is hidden from our minds under sensible appearances. We should adore and love it; but we should also fear it, since if it can fill us with pleasures, it can also overwhelm us with pains. We should love it with a voluntary love, an enlightened love, a love worthy of God and ourselves. Our love is worthy of God when we love Him because of our knowledge that He is worthy of love; and this love is worthy of us because, being reasonable, we should love what reason makes us know as worthy of our love. But we love sensible things by a love unworthy of ourselves, and undeserved by them because, being reasonable, we love these things without any reason for doing so, since we do not clearly see that they are worthy of love. On the contrary, we know that they are not. But pleasure seduces us and makes us love them, the blind and inordinate love of pleasure being the true cause of the false judgments of men in moral subjects.

BOOK FOUR

Chapter Eleven

The love of Pleasure in relation to the speculative sciences. I. How it prevents us from discovering the truth. II. Some examples. III. Clarification of Descartes's proof for the existence of God.

That the inclination we have for sensible pleasures is badly governed is not only the origin of the dangerous mistakes we fall into in moral subjects, and the general cause of the disorder of our morals: it is also one of the principal causes of the disturbance of our minds, and it imperceptibly involves us in very crude, but less dangerous, errors in purely speculative subjects, because this inclination prevents us from bringing to things that do not affect us sufficient attention to understand them and judge well of them.

I have already spoken in several places of the difficulty men find in applying themselves to slightly abstract subjects, because the material I was then treating also demanded it. I spoke of it toward the end of the first book in showing that, since sensible ideas affect the soul more than pure ideas of the mind, the soul more often applied itself to modes than to things themselves. I spoke of it in the second book because, dealing with the delicacy of the brain fibers, I demonstrated the source of the flabbiness of certain effeminate minds. Finally, I spoke of it in the third book in speaking of the mind's attention, when it was necessary to show that our soul is barely attentive to purely speculative things, but much more attentive to things that affect it, making it feel pleasure or pain.

Our errors nearly always have several causes, all of which contribute to their origin; hence it should not be thought that it is for want of order that we sometimes repeat nearly the same ones, and that we assign several causes to the same mistakes; it is because they indeed have several causes. I am not speaking of real causes, for we have often said that there is no other real and true cause but the misuse of our freedom, which is due to our not always using it as much as we can, as we have explained[a] from the very beginning of this work.

There should therefore be no complaint if, in order to make it fully understood how, for example, the sensible modes with which we disguise things surprise us and make us fall into error, I have had to state in advance in the other books that we are inclined toward pleasures, which it appears should be reserved for this book, which deals with natural inclinations; and similarly with other things in other places. The only harm that will come of it is that we shall have no need to say many things here that we would have been obliged to explain if we had not done so elsewhere.

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[a] Ch. 2 [bk. 1]

All things in man are so closely dependent upon one another that we often find ourselves overwhelmed by the number of things that must be said simultaneously in order to explain our conceptions thoroughly. Sometimes we find ourselves obliged not to separate things that are naturally joined to one another, and to go against the order we have prescribed for ourselves when this order brings only confusion, as necessarily happends to some instances. However, with all this it is never possible to make others experience everything we think. All we should ordinarily attempt is to place the reader in such a state that he can discover for himself, with pleasure and ease, what we ourselves have discovered with pain and fatigue. And because one can discover nothing without attention, one should especially study the means of making others attentive. That is what I have tried to do, although I realize that I have executed it badly enough; and I admit my fault the more willingly, as the admission should move those who will read this to make themselves attentive through their own efforts, in order to improve it and in order to penetrate to the bottom of subjects that undoubtedly are worthy of such penetration.

The errors into which we are thrown by our inclination toward pleasures, and in general toward everything that affects us, are infinite; because this inclination dissipates the vision of the mind, because it incessantly applies it to the confused ideas of the senses and the imagination, and because it leads us to judge all things precipitously in the light of the single relation they have to us.

I. How the love of pleasure prevents us from discovering the truth.

One sees the truth only when one sees things as they are, and one never sees them as they are unless one sees them in Him, who contains them in an intelligible manner. When we perceive [*voyons*] things in ourselves, we see them only in a very imperfect manner; or rather we see only our sensations and not the things we wish to see, and believe falsely that we do see.

Concentration is needed to see things as they are in themselves because at present we become united with God only with trouble and effort. But to see things in us, no concentration is necessary on our part because we sense what affects us even in spite of ourselves. We do not naturally find any prevenient pleasure in our union with God; pure ideas of things do not affect us; I mean that they do not affect us sensibly and vividly. Thus, our inclination toward pleasure does not direct us toward, or unite us with, God; on the contrary, it ceaselessly detaches and removes us from Him. For this inclination continually leads us to consider things by their sensible ideas, because these false and impure ideas strongly affect us. The love of pleasure, and the actual enjoyment of pleasure, which awakens and fortifies the love of it, therefore constantly removes us from truth, throwing us into error.

Thus, those who want to approach the truth in order to be illuminated by its light should begin by depriving themselves of pleasure. They should carefully avoid all that affects and pleasantly distracts the mind. For the senses and the passions must be silent if one wishes to hear the word of truth, since removal from the world and scorn for all sensible things are as necessary for perfection of the mind as for conversion of the heart.

When our pleasures are great, when our sensations are lively, we are incapable of grasping the simplest truths, and we do not even agree with common notions unless they include some sensible material. When our pleasures or other sensations are moderate, we can understand some simple and easy truths; but if we were entirely free from pleasures and sensations, we could easily discover the most abstract and difficult truths known. For to the extent that we remove ourselves from what is not God, we bring ourselves nearer to God Himself; we avoid error and discover truth. But since the sin, since the advent of the deranged love of prevenient, dominant, and victorious pleasure, the mind has become so feeble that it can penetrate nothing, and so material and dependent upon its senses that it cannot take hold of anything without a body, or pay attention to abstract truths that do not affect it. It does not even perceive common notions without difficulty; and often it judges, for lack of attention, that they are false or obscure. It cannot distinguish the truth of things from their utility, or the relation they have among themselves from that they have to it; and it often believes that those truths which are the most useful to it, the most agreeable and which affect it the most, are the truest. Finally, this inclination infects and distorts all the perceptions we have of objects and, as a result, all the judgments we make about them. Here are some examples.

II. Some examples.

It is a common notion that virtue is more estimable than vice, that it is better to be sober and chaste than intemperate and sensuous. But the inclination toward pleasure so strongly confuses this idea on certain occasions that we can catch only a glimpse of it, and we cannot draw the conclusions necessary for the conduct of life from it. The soul is so completely occupied with the pleasures it wants that it assumes them to be innocent and seeks only the means to satisfy them.

Everybody knows well that it is better to be just than to be rich, that justice makes a man greater than does the possession of the most superb buildings, which often do not so much demonstrate the greatness of their builder as they do the greatness of his injustices and crimes. But the pleasure that men of no merit derive from the vain ostentation of their false greatness sufficiently fills the tiny capacity of their minds to hide and obscure from them such an evident truth. They foolishly imagine that they are great men because they have great mansions.

Analysis or the Algebra of kinds is assuredly the most beautiful, i.e., the most fruitful and the most certain, of all sciences. Without it the mind has neither penetration nor scope; and with it it is capable of knowing nearly everything that can be known with certitude and clarity. As imperfect as this science has been, it made famous all those who have been instructed in it and who have known how to use it. By means of it they discovered truths that appeared incomprehensible to other men. It is so proportioned to the human mind that, without distracting its attention with things irrelevant to what it seeks, it infallibly guides it to its goal. In a word, it is a universal science and the key, as it were, to all other sciences. Nevertheless, however estimable it is in itself, there is nothing either exciting or charming about it to the majority of men for the single reason that it is not sensible. It was completely forgotten for several centuries. There are still many people who do not even know its name; and out of a thousand people, there are scarcely one or two who know something about it. The most learned men who have revived it in our time have hardly advanced it any further, and they have not treated it with the order and clarity it merits. Being men like other men, they are in the end disenchanted by these pure truths that are not accompanied by sensible pleasure. And the restlessness of their will, corrupted by sin, the frivolity of their mind (which depends on the agitation and circulation of the blood), has not allowed them to be further nourished by these great, vast, fruitful truths, the immutable and universal rules of all the fleeting and particular truths that can be known with precision.

Metaphysics is a similarly abstract science that does not flatter the senses, and to whose study the soul is not drawn by any prevenient pleasure; for the same reason this science is very much neglected, and one often finds people foolish enough to boldly deny common notions. There are even some who deny that we can and should assert of a thing what is included in the clear and distinct idea we have of it; that nothingness has no properties; that a thing cannot be reduced to nothing without a miracle; that no body can move itself by its own forces; that an agitated body cannot communicate to bodies with which it collides more motion than it possesses, and other such things. They have never considered these axioms from a viewpoint clear and focused enough to discover their truth clearly. And they have sometimes performed experiments that convinced them falsely that some of these axioms were not true. They have seen that in certain collisions the bodies that were struck had more motion after than before being struck, and that in others they had less. They have seen that often the simple touching of some visible body was swiftly followed by great movements.[a] And this sensible observation of certain experiments of whose explanations they are ignorant has made them conclude that natural forces can be both increased and destroyed. Should they not have considered that motion can be propagated from visible to invisible bodies when bodies in motion meet, or from invisible bodies to visible ones on other occasions? When a body is suspended from a cord, it is not the scissors with which one cuts the cord that gives motion to this body, it is an invisible matter. When someone throws a live coal into a pile of gunpowder, it is not the motion of the coal but an invisible matter that separates all the parts of this powder, and that imparts to them a motion capable of exploding a house. There are a thousand unknown ways in which invisible matter communicates its motion to visible and heavy bodies. At least it is obvious that this cannot happen by itself, because it is clear that the motor force of the bodies cannot naturally increase or diminish.

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[a] See the Laws of Motion in the *Elucidations* [vol. 17(1)].

Similarly, men see that wood thrown into a fire ceases to be what it is, and that all the sensible qualities they notice there vanish; and from this men imagine they have the right to conclude that a thing can return to the nothingness whence it came. They cease to see the wood, and see only the few cinders that succeed it, and from this they judge that the greatest part of the wood ceases to be, as if the wood could not be reduced to particles they could not see. At least it is not as evident that this is impossible as it is evident that the power which gives being to all things is not subject to change, and that by the ordinary forces of nature what exists cannot be reduced to nothing, just as what does not exist cannot begin to be. But the majority of men do not know what it is to enter into themselves in order to hear the voice of truth there, by which they ought to judge all things. Their eyes govern their decisions. They judge according to what they sense and not according to what they conceive, for they sense with pleasure and conceive with pain.

Ask all the men in the world whether one can be certain, without fear of error, that the whole is greater than its parts, and I am sure that not one will be found who will not give the appropriate answer right away. Then ask them if one can in the same way, without fear of error, be certain of a thing one clearly conceives to be included in the idea that represents it, and you will see that few will agree to this without hesitation, that some will deny it, and the majority will not know how to respond. And yet this metaphysical axiom, i.e., that one can be certain of something one clearly conceives to be included in the idea that represents it (or rather, that everything one clearly conceives is precisely such as one conceives it), is more evident than the axiom that states that the whole is greater than its parts, because this latter axiom is not so much an axiom as a conclusion from the first axiom. One can prove that the whole is greater than its parts by this first axiom, but the first cannot be proven by any other. It is absolutely the first and most fundamental axiom of all clear and evident knowledge. How is it then that no one hesitates at this conclusion, while many people doubt the premiss from which it is drawn, unless it is that the ideas of whole and part are sensible and that one sees, so to speak, with one's eyes that the whole is greater than its part but that we do not see with out eyes the truth of the first axiom of all the sciences?

As there is nothing in this axiom that naturally arrests and applies the mind, it is necessary to will to consider it; and even a little constancy and firmness is needed in order to recognize clearly its truth. The strength of the will must make up for sensible allurement. But men never set themselves to study objects that do not flatter their senses; or, if they do, they do not make any effort in it.

For (to continue this same example), they think it evident that the whole is greater than its part, that a mountain of marble is possible and that a mountain without a valley is impossible, and that it is not equally evident that there is a God. Nevertheless, we can state that all these propositions are equally evident, since they are all equally removed from the first principle.

Here is the first principle:[a] one should attribute to a thing what one clearly conceives to be included in the idea that represents it; we clearly conceive that there is more magnitude in our idea of a whole than in our idea of its part; that possible existence is contained in the idea of a mountain of marble; that impossible existence is part of the idea of a mountain without a valley, and that necessary existence is included in the idea we have of God, i.e., in our idea of an infinitely perfect being: therefore, the whole is greater than its parts; therefore, a mountain of marble can exist; therefore, a mountain without a valley cannot exist; therefore, God or the infinitely perfect being necessarily exists. It is obvious that these conclusions are equally removed from the first principle of all the sciences; they are therefore equally evident in themselves. It is therefore as evident that God exists as that the whole is greater than its part. But because the ideas of infinity, perfection, and necessary existence are not sensible as are the ideas of whole and part, we imagine that we cannot conceive what we do not sense; and although these conclusions are equally evident, they are nevertheless not equally accepted.

There are people who try to persuade us that they do not have an idea of an infinitely perfect being. But I do not know how they can bring themselves to answer positively when they are asked whether an infinitely perfect being is round or square or some similar thing; for they ought to say that they know nothing about it if it is true that they have no idea of it.

There are others who agree that it is good reasoning to conclude that God is not an impossible being from the fact that we see that the idea of God does not include any contradiction or impossible existence; but they do not want us to conclude by the same reasoning that God necessarily exists, on the basis of our conceiving necessary existence in the idea that we have of Him.

Finally there are others who pretend that this proof of the existence of God (which is Descartes's) is a pure sophism, and that the argument results in this conclusion only if we assume it to be true that God exists, as if we had not proved it. Here is the proof: one should attribute to a thing what one clearly conceives to be included in the idea that represents it. This is the general principle of all the sciences. Necessary existence is included in the idea that represents an infinitely perfect being. They agree with this. And consequently one should say that the infinitely perfect being exists. Yes, they say, assuming that it exists.

But let us make a similar reply to a similar argument, so that we can judge the soundness of their answer. Here is a similar argument: one should attribute to a thing what one clearly conceives to be included in the idea that represents it; this is the principle. We clearly conceive that four angles are included in the idea that represents a square, or, we clearly conceive that possible existence is included in the idea of a marble tower; therefore, a square has four angles; therefore, a marble tower is possible. I say that these conclusions are true, assuming that the square has four angles, and that the marble tower is possible, just as they reply that God exists, assuming that He exists, i.e., in a word, that the conclusions of these demonstrations are true, assuming that they are true.

I would admit their point were I to argue as follows: one should attribute to a thing what one clearly conceives to be included in the idea that represents it; one clearly conceives that necessary existence is included in the idea of an infinitely perfect body; therefore, an infinitely perfect body exists; it is true, I say, that were I to argue in this way, one would have reason to reply to me that the argument did not prove the actual existence of an infinitely perfect body but only that, assuming there were such a body, it would have independent existence. The reason is that the idea of an infinitely perfect body is a fiction of the mind or a complex idea, which therefore can be false or contradictory, as indeed it is; for one cannot clearly conceive of an infinitely perfect body; a particular and finite being, such as a body, cannot be conceived as universal and infinite.

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[a] This reasoning is drawn from Descartes's *Meditations*.

But the idea of God or of being in general, of being without limit, of infinite being, is not a fiction of the mind. It is not a complex idea that includes some contradiction; there is nothing simpler, although it includes everything that is or can be. Now, this simple and natural idea of being or infinity includes necessary existence; for it is evident that being (I do not say a *such being*) has its existence in itself, and that being cannot actually (or really) not be, since it is impossible and contradictory that true being be without existence. It could be that there were no bodies, because bodies are *such beings* that participate in being and are dependent upon it. But being without restriction is necessary; it is independent; it derives what it is from nothing but itself; everything that is comes from it. If there is anything, it is, since everything that is comes from it; but if there were nothing in particular, it would be, because it is in itself and because it cannot be clearly conceived as nonexistent, unless it is represented as a being in particular or as a *such being*, that is, unless it is considered as a completely different idea than its own. For those who do not see that God is usually do not consider being, but a *such being* and consequently a being that can be or not be.

III. Elucidation of Descartes's proof for God's existence.

However, so that we shall be able to understand Descartes's proof for the existence of God still more distinctly, and to reply more clearly to any criticisms one could make of it, here is what it seems to me must be added to it. One must remember that when we see a creature, we see it neither in itself nor of itself, for we see it (as we proved in the third book) only through the perception of certain perfections in God that represent it. Thus, we can see the essence of this creature without seeing its existence, i.e., we can see its idea without seeing it; we can see in God that which represents it without its existing. It is uniquely because of this that necessary existence is not included in the idea that represents it, since it is not necessary for it actually to exist in order for us to see it, unless we claim that created objects are immediately visible, intelligible in themselves, and capable of illuminating, affecting, and modifying intelligences. But it is not the same with infinitely perfect being; one can see it only in itself, for nothing finite can represent the infinite. Therefore, one cannot see God without His existing; one cannot see the essence of an infinitely perfect being without seeing its existence; one cannot conceive it simply as a possible being; nothing limits it; nothing can represent it. Therefore, if one thinks of it, it must exist.

This reasoning appears conclusive to me. Yet there are people who support the proposition that the finite can represent the infinite; and that the modes of our soul, although finite, are essentially representative of infinitely perfect being, and generally, of all that we perceive, a gross error, which by its consequences destroys the certitude of all the sciences, as is easy to prove. But it is so false that the modes of the soul are representative of all beings that they cannot be representative of any, not even the being of which they are modes: for although we have an inner sensation of our existence and of our actual modes, we do not know them at all.

Certainly the soul has no clear idea of its substance, according to what I mean[a] by *clear idea*. It cannot discover by examining itself whether it is capable of this or that modification it has never had. It truly experiences its pain, but it does not know it; it does not know how its substance must be modified in order to suffer pain, and to suffer one pain rather than another. There is a great difference between sensing and knowing itself. God, who continually acts in the soul, knows it perfectly; He sees clearly, without suffering pain, how the soul must be modified to suffer pain, whereas the soul, on the other hand, suffers pain and does not know it. God knows it without feeling it, and the soul feels it without knowing it.

God knows the nature of the soul clearly because He finds in Himself a clear and representative idea of it. God, as Saint Thomas says,[b] knows His substance or His essence perfectly, and as a result He discovers all the ways in which created things can participate in His substance. Hence His substance is truly representative of the soul, because it contains its eternal model or archetype. For God can only draw His knowledge from Himself. He sees in His essence the ideas or essences of all possible beings, and in His volitions (He sees) their existence and all its circumstances. But the soul is only darkness to itself; its light comes to it from elsewhere. Of all the beings that it knows and can know, none is a resemblance of its substance, and none participates in it. It does not contain their perfections eminently. The modes of the soul therefore cannot be, as in God, representative of the essence or the idea of possible beings. It is therefore necessary to distinguish the ideas that enlighten us, that affect us, and that represent these beings, from the modes of our soul, i.e., from our perceptions of them. And as the existence of created things does not depend upon our wills but upon that of the Creator, it is again clear that we cannot be assured of their existence except by some kind of revelation, either natural or supernatural.

But in addition, if all beings were resemblances of our soul, how could it see them in its supposedly representative modes, the soul that does not know its substance perfectly, "secundum omnem modum quo cognoscibilis est," that does not know how it is modified through its perception of objects—what am I saying?—that confuses itself with the body, and often does not know which modes belong to it; the soul that when moved, or affected by the efficacy of ideas, experiences its modes or perceptions within itself (for where else would it experience them?) but that will never discover clearly what it is, its nature, its properties, all the modes of which it is capable, until the luminous and always efficacious substance of the divinity reveals to the soul the idea that represents it, the intelligible mind, the eternal model upon which it has been formed? But let us try to clarify this matter further, to force the attentive mind to yield to this proposition, which has seemed clear to me in and of itself: that nothing finite can represent the infinite, and that therefore God exists, since we think of Him.

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[a] See ch. 7, pt. 2, bk. 3, and the Elucidation relating to it [10].

[b] "Deus essentiam suam perfecte cognoscit. Unde cognoscit eam secundum omnem modum quo cognoscibilis est. Potest autem cognosci non solum secundum quod in se est, sed secundum quod est participabilis, secundum aliquem modum similitudinis à creaturis. Una quaeque autem creatura habet propriam speciem secundum quod aliquo modo participat divinae essentiae similitudinem. Sic igitur in quantum Deus cognoscit suam essentiam ut sic imitabuken a tali creatura cognoscit eam ut propriam rationem & ideam hujus creaturae; & similiter de aliis," I. p. q. 15. art. 2. V. quaest. 14. art. 6.

It is certain that nothingness or the false is not perceptible or intelligible. To see nothing is not to see; to think of nothing is not to think. It is impossible to perceive a falsehood, a relation of equality, for example, between two and two, and five; for this or any like relation that does not exist can be believed, but certainly cannot be perceived because nothingness is not perceptible. Properly speaking, this is the first principle of all our knowledge; it is also the one with which I began the *Dialogues on Metaphysics,* whose first two dialoques might be read with profit here. For the principle generally accepted by the Cartesians, that whatever is clearly conceived to be contained in the idea representing a thing can be asserted of that thing, depends on it; and this principle is true only if we assume that ideas are immutable, necessary, and divine. For if our ideas were only our perceptions, if our modes were representative, how would we know that things correspond to our ideas, since God does not think, and consequently does not act, according to our perceptions but according to His own; and therefore He did not create the world according to our perceptions but in accordance with His ideas, on its eternal model that He finds in His essence. Now it follows from this that nothingness is not perceptible, and that everything we see clearly, directly, immediately, necessarily exists. I say what we immediately see, attest to, or conceive; for to speak strictly, the objects we immediately see are very different from those we see externally, or rather from those we think we see or look at; for in one sense it is true that we do not see these latter, since we can see, or rather believe we see, external objects that are not there, notwithstanding the fact that nothingness is not perceptible. But there is a contradiction in saying that we can immediately see what does not exist, for this is to say that at the same time we see and do not see, since to see nothing is not to see.

But although something must be in order to be perceived, everything that is, is not thereby perceptible in itself; for in order to be so, it must be able to act immediately upon the soul, it must be able of itself to enlighten, affect, or modify minds. Otherwise, our soul, which is purely passive so far as being able to perceive, will never perceive it. For even if the soul is imagined to be in the object and to penetrate it, as it is normally assumed to be in the brain and to penetrate it, the soul could not perceive it, since it cannot even discover the particles composing its brain, where it is said to make its principal residence. This is because there is nothing perceptible and intelligible in itself except what can act upon minds.

Nevertheless, let us assume these two false propositions: (1) that all reality can be perceived by the supposed action of the mind, and (2) that the soul does not have merely an inner sensation of its being and modes but that it knows them perfectly. Provided only that you agree with me that nothingness is not perceptible, as I have just demonstrated, it is very easy to conclude from this that the modes of the soul cannot represent the infinite. For we cannot see three realities where there are only two, since we would see a nothingness, a reality that would not be. We cannot see a hundred real things where there are only forty, for we would see sixty real things that would not be at all. Therefore, we cannot see the infinite in the soul or in its finite modes, for we would see an infinite that would not exist. Now, nothingness is neither perceptible nor intelligible; therefore, the soul cannot see in its substance or in its modes an infinite reality, for example, that intelligible extension which one sees so clearly to be infinite that one is certain the soul could never exhaust it. But to be able to represent the infinite is not <merely> to be able to perceive it, or to be able to have a very slight or infinitely limited perception of it, such as we have; it is to be able to perceive it in itself, and consequently to contain it, so to speak (since nothingness cannot be perceived) and to contain it in such a way that it is intelligible or efficacious in itself, and capable of affecting the intelligent substance of the soul.

It is clear, then, that the soul, its modes, or anything finite, cannot represent the infinite, that we cannot see the infinite except in itself and in virtue of the efficacy of its substance, that the infinite does not and cannot have an archetype, or an idea distinct from it, that represents it, and that therefore if we think of the infinite, it must exist. But certainly we do think of it; we have of it, I do not say an *understanding* or a perception that describes and embraces it, but some perception of it, i.e., an infinitely limited perception, by contrast to a perfect understanding.

It should be noted carefully that it takes neither more thought nor a greater capacity for thinking to have an infinitely limited perception of the infinite than to have a perfect perception of something finite, since all finite magnitude, compared to or divided by the infinite, is to this finite magnitude as this same magnitude is to the infinite. This is evident by the same argument that proves that 1/1000 is to 1 as 1 is to 1,000; that two, three, or four millionths is to two, three, or four as two, three, or four is to two, three, or four million. For even if the zeros are infinitely increased, it is clear that the proportion always remains the same. This is because a finite magnitude or reality is equivalent to an infinitely small reality of the infinite, or in relation to the infinite; I say in relation to the infinite, because the large and the small are so only relatively speaking. Hence, it is certain a mode or finite perception can in itself be the perception of the infinite, provided that the perception of the infinite is infinitely small in relation to an infinite perception, or to the perfect understanding of the infinite.

To try to understand more distinctly how a finite mind can perceive the infinite, let us imagine that the soul's capacity for perceiving it is, for example, of four degrees, and that the idea of its hand or of a foot of extension affects it so vividly with pain that the soul's entire capacity for thought is filled by it. It is clear that if the idea of two feet of extension affects it with half this, its capacity for thought will suffice to perceive this extension. In the same way, if the immediate object affecting it is a million times greater, but only affects it with a force one-millionth of the former, its capacity for thought will suffice to perceive it; and the product, so to speak, of the infinity of the object and the infinitely small perception will always equal the soul's capacity for thought. For the product of the infinite and the infinitely small is a finite and constant magnitude, as is the soul's thinking capacity. This is evident, and it is the foundation of the property of hyperbolas between asymptotes, the product of whose abscissae increasing to infinity and the ordinates infinitely decreasing, is always equal to the same magnitude. Now, the product of infinity and zero is certainly zero, and our capacity for thinking is not zero; it is not null. It is therefore clear that our mind, although finite, can perceive the infinite, but by virtue of a perception that, though infinitely weak, is certainly quite real.

It must be noted above all that one should not judge the magnitude of objects or the reality of ideas according to their strength and vivacity, or, to speak with the schools, according to the degree of *intention* of the modes or perceptions by which ideas affect our soul. The point of a thorn that pricks me, a glowing coal that burns me, does not have as much reality as the countryside I see. Nonetheless, my capacity for thinking is filled more by the pain of the prick or by the burn than by the sight of the countryside. In the same way, when my eyes are open in the middle of a countryside, I have a sensible perception of a limited extension that is much more vivid and that occupies my soul more than the perception I have when I think of the extension with my eyes closed. But the idea of extension that affects me through the sensation of various colors does not have more reality than the one that affects me only by pure intellection even when my eyes are closed; for through pure intellection I see extension infinitely beyond that which I see with open eyes. It is therefore not necessary to judge, I do not say the efficacy, but the reality of ideas according to the strength with which they affect us; but it is necessary to judge the extent of their reality by what we discover in them, however weak be the mode by which they affect us, however feeble the perception we have of them. It is necessary to judge of their reality because we perceive it, and because nothingness cannot be perceived. I say this so it will be understood there is no contradiction in saying the infinite can be perceived by a finite perceptual capacity, and to disabuse those who, deceived by this supposed contradiction, maintain that we have no idea of the infinite, notwithstanding the inner sensation that teaches us that we actually think about the infinite, or, to speak as others, that we naturally have the idea of God or of the infinitely perfect being.

I could have proved that the soul's modes are not representative of the infinite or of anything else, or that ideas are very different from our perceptions of them, by proofs other than the ones I have just drawn from this common notion, that nothingness is not perceptible. For it is clear that the soul's modes are changeable but ideas are immutable; that its modes are particular, but ideas are universal and general to all intelligences; that its modes are contingent, but ideas are eternal and necessary; that its modes are obscure and shadowy, but ideas are very clear and luminous (i.e., its modes are only obscurely, though vividly, felt, but ideas are clearly known as the foundation of all the sciences); that these ideas are indeed efficacious because they act in the mind, they enlighten it and make it happy or unhappy, which is evident by the pain that the idea of the hand causes in those who have had an arm cut off. But I have already written so much about the nature of ideas in this and many other works that I think I have some right to direct the reader to those places.

It is as evident, then, that there is a God as it is to me that I am. I conclude that I am because I experience myself, and because nothing cannot be experienced. I conclude in the same way that God exists, that the infinitely perfect being exists, because I perceive it, and because nothing cannot be perceived, nor consequently can the infinite be perceived in the finite.

But it is rather useless to propose these demonstrations to ordinary men. These are demonstrations that might be called personal, because they are not generally convincing to all men. This is because the majority, and sometimes even the most learned or those who have read most, do not wish, or are unable, to pay attention to metaphysical proofs, for which they usually have a sovereign contempt. It is necessary then, if one wishes to convince them, to produce more intuitive proofs. And certainly these are not lacking; for there is no truth that has more proofs than that of the existence of God. I produce this one only to show that abstract truths, acting but little upon our senses, are taken for illusions and chimeras; whereas crude and palpable truths, which are sensibly compelling, force the soul to consider them, thereby persuading us that they are very real because, since the sin, they make a much greater impression upon our mind than do purely intelligible truths.

For the same reason there is not room for hope that ordinary men will ever submit to that demonstration which proves that animals are insensible, to wit, being innocent, as everyone agrees and I assume, if they were capable of feeling, this would mean that under an infinitely just and omnipotent God, an innocent creature would suffer pain, which is a penalty and a punishment for some sin. Men are usually incapable of seeing the evidence for this axiom: ''Sub justo Deo, quisquam, nisi mereatur, miser esse non potest,'' which Saint Augustine[a] very rightly uses against Julian in order to prove Original Sin and the corruption of our nature. They imagine that there is no force or solidity in this axiom and in certain others which prove that beasts do not feel because, as we have just said, these axioms are abstract, they include nothing either sensible or palpable, and they make no impression on our senses.

The actions and sensible movements that beasts make for the preservation of their lives are the arguments that, although only probable, affect us more, and consequently incline us more strongly to believe that they suffer pain when someone strikes them and they cry out, than the abstract argument of the pure intellect, though very certain and very evident in itself. For it is certain that most men have no other reason for believing that animals have souls than the sensible perception of everything that beasts do to preserve their lives.

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[a] Opera perfecta contra secundam Juliani responsionem [bk. 1, ch. 39].

This[a] appears sufficiently obvious from the fact that the most men do not imagine that there is a soul in an egg, although the transformation of an egg into a chicken is infinitely more difficult than the mere preservation of the chicken once it is formed. For just as it takes more intelligence to make a watch out of a piece of iron than it does to make it run once constructed, so it would be necessary rather to admit a soul into the egg in order to form a chicken from it than it would be to make the chicken live once it is completely formed. But men do not sensibly perceive the admirable manner in which a chicken is formed, as they always sensibly perceive the way it seeks the things necessary for its preservation. Hence they are not disposed to believe there are souls in eggs because of any sensible impression of the movements necessary to transform eggs into chickens; but they assign souls to animals because of the sensible impression they have of the external acts these animals perform for the preservation of their lives, although the argument I have just given is more applicable to assigning souls to eggs than to assigning them to chickens.

This second argument (that all souls being more excellent substances than bodies, they would be misdirected if they were created only to *inform* bodies, and if their only end were the enjoyment of bodies), this argument, I say, should be convincing on the point that beasts do not have a soul for those who believe, on the one hand, that beasts are without sin and, on the other, that God is wise and that, being invincibly self-loving, He values those beings more who participate most in His essence. Finally, it is evident that matter is capable only of the modifications that can be deduced from the clear idea we have of its essence; and thus to hold that beasts feel, desire, and know, although their souls are corporeal, is to say what is inconceivable and what contains a manifest contradiction. But men will eternally confound and confuse these arguments rather than admit anything contrary to proofs merely probable, but most obvious and most sensible; and we shall be able to convince them fully only by opposing sensible proofs to their sensible proofs and, as Descartes began to do in his treatise *De l'homme*, by visibly showing them how all the parts of animals are merely mechanical, and that they can be moved without a soul merely by the impression of objects and by their particular constitution. For all the most certain and most evident arguments of the pure understanding will never persuade them against the obscure proofs they have through their senses. Indeed, one risks exposing oneself to the laughter of superficial and inattentive minds if one pretends to prove to them, by moderately abstract arguments, that animals do not sense.

It must be remembered that the strong inclination we have for diversions, pleasures, and generally for everything that affects our senses, throws us into a great many errors because, the capacity of our minds being limited, this inclination constantly distracts us from the clear and distinct ideas of the pure understanding needed for the discovery of truth, and causes us to apply ourselves to the false, obscure, and misleading ideas of our senses, which influence the will more through the hope of good and pleasure than they illuminate the mind by their light and evidence.

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[a] I speak here according to the opinion of those who believe that the chicken is formed from the egg, although it is perhaps only nourished by it.

BOOK FOUR

Chapter Twelve

The effects that the thought of future goods and evils is capable of producing in the mind.

If it often happens that the slight pleasures and pains we actually feel, or even expect to feel, greatly upset our imagination and prevent us from judging things according to their true ideas, we must not imagine that the expectation of eternity does not act upon our minds. But it is appropriate to consider what that expectation is capable of producing in them.

It must first be noted that the hope of an eternity of pleasures does not act as strongly upon minds as does the fear of an eternity of torments. The explanation of this is that men's love of pleasure is not as great as their hatred of pain. Furthermore, through this inner sensation of their disorders, they know they are deserving of hell, and they see nothing in themselves that deserves a reward as great as that of participation in the felicity of God himself. Voluntarily or not, they feel that, far from deserving these rewards, they are deserving of the greatest punishments; for their conscience never leaves them. But they are not constantly convinced in the same way that God wills to show His mercy to sinners after they have violated His justice against His Son. Thus, even the just fear an eternity of torments more vividly than they hope for an eternity of pleasures. Therefore, the vision of pain is more effective than that of reward; and the following is roughly what it is capable of producing, not by itself but as principal cause.

It generates an infinity of scruples in the mind and fortifies them in such a way that deliverance from them is nearly impossible. It extends faith, so to speak, to the boundaries of prejudice, and causes us to render to imaginary powers the worship due only unto God. It stubbornly entrenches the mind in vain or dangerous superstitions. It makes us ardently and zealously embrace human traditions and practices useless for salvation, Jewish and Pharisaic devotions invented by servile fear. Finally, it sometimes casts men into a blindness of despair, with the result that, confusedly regarding death as nothingness, they brutally hurry toward their doom in order to be delivered from the mortal anxieties that agitate and frighten them. Women, young people, and feeble minds are the most subject to scruples and superstitions, and men are the most capable of despair.

It is easy to recognize the reasons for all these things; for it is obvious that the idea of eternity being the greatest, the most terrible and most frightening of all those that astonish the mind and strike the imagination, it is necessarily accompanied by a large following of ancillary ideas, which all have a considerable effect upon the mind because of their relation to this great and terrible idea of eternity.

Whatever is related to the infinite is not small; or, if it is small in itself, it receives, through this relation, a limitless greatness that cannot be compared with anything finite. Thus, whatever relates, or is even imagined to relate, to this inevitable alternative of an eternity of torments or an eternity of delights, which is proposed to us, necessarily frightens all minds capable of any reflection and feeling.

Women, young people, and feeble minds, having (as I have already said elsewhere) soft and flexible brain fibers, receive the deepest impressions from this alternative; when they have an abundance of animal spirits and are more capable of feeling than of accurate reflection, they receive, because of the vivacity of their imagination, a very large number of false impressions and ancillary ideas bearing no natural relation to the principal idea. Nevertheless, this relation, although imaginary, never ceases supporting and strengthening these false impressions and ancillary ideas to which it has given birth.

Litigants deeply involved in a major lawsuit whose procedures they do not understand often have unjustified concerns, because they fear that certain things for which the judges have no concern and about which the lawyers have no fear, will harm them. Because the matter is of great consequence to them, the disturbance it produces in their brain spreads and is communicated to remote traces not naturally related to it. Such is also the case with the scrupulous; they irrationally create subjects of fear and anxiety for themselves. Instead of examining the will of God in the Sacred Scriptures and consulting with those whose imaginations are not wounded, they constantly think of an imaginary law that the inordinate impulses of fear have engraved in their brains. And although they are inwardly convinced of their weakness, and although God does not demand certain duties of them that they prescribe for themselves (since they hinder their serving Him), they cannot help preferring their imagination to their mind and submitting to certain confused opinions that frighten them and make them fall into error, rather than to the evidence of reason, which reassures them and returns them to the true path of their salvation.

There is often a great deal of virtue and charity to be found in persons afflicted with scruples; but there is very much less in those attached to certain superstitions, whose principal occupation is certain Jewish and Pharisaic practices. God wills to be adored in spirit and in truth; he is not content with facial expressions and external civilities affected by genuflecting in His presence, and by praising Him with a movement of the lips in which the heart has no part. Men are content with these marks of respect only because they cannot penetrate the heart; for men are even unjust enough to wish to be adored in spirit and in truth. God therefore demands both our minds and our hearts: He made it only for Himself and He conserves it only for Himself. But there are many men who, unhappily for them, refuse God the things to which He has all manner of right. They have idols in their hearts, which they adore in spirit and in truth, and to which they sacrifice all that they are.

But because the true God threatens them in the secret recesses of their conscience with an eternity of torments to punish their excessive ingratitude, and because, in spite of this, they do not want to abandon their idolatry, they take it into their heads to perform some externally good works. They fast, as do others; they give alms; they say prayers. They continue such practices for a while, but because they are painful to those lacking in charity, they usually abandon them in order to embrace certain insignificant practices or easy devotions that accord with self-love and necessarily subvert the entire morality of Jesus Christ, but in a way that is imperceptible to them. They are faithful, ardent, and zealous defenders of these human traditions that unenlightened people persuade them are most useful, and that the idea of eternity, which frightens them, constantly represents to them as absolutely necessary for their salvation.

Such is not the case with the righteous. They hear, as do the impious, the warnings of their God; but the confused clamor of their passions does not prevent them from hearing His counsels. The false luster of human traditions does not dazzle them to the point of not sensing the light of truth. They place their confidence in the promises of Jesus Christ, and they follow his precepts; for they know that the promises of men are as vain as their counsels. Nevertheless, it can be said that this fear that the idea of eternity causes in their minds sometimes produces such a great disturbance in their imaginations that they dare not condemn these human traditions outright, and they often approve them by their example, because they have *some appearance*[a] *of wisdom in their superstition and in their false humility*, as do these Pharisaic traditions of which Saint Paul speaks.

But what is especially noteworthy here, and which does not concern the disorder of morals as much as it does that of the mind, is that the fear of which we have just spoken often extends the faith as well as the zeal of those struck with it to include things that are false as well as unworthy of the holiness of our religion. There are many people who believe, but with an unflagging and obstinate faith, that the earth is immobile at the center of the universe; that animals feel genuine pain; that sensible qualities are spread over objects; that there are forms or real accidents distinct from matter, and an infinity of such false or uncertain opinions, because they imagine that it would be contrary to the faith to deny them. They are startled by the expressions in Sacred Scripture, which are spoken to be heeded, not to instruct us in physics (and consequently are set in ordinary ways of speaking). They believe not only what the mind of God would teach them but also all the opinions of the Jews. They do not see that Joshua, for example, speaks before his soldiers even as Copernicus, Galileo, and Descartes would speak to ordinary men, and that, even had he been of the opinion of these philosophers, he would not have commanded the earth to stand still, since he could not have explained to his army, in words they could have understood, the miracle God wrought for His people. Do not those who believe that the sun is immobile say to their servants, their friends, even to those who share their view, that the sun rises and sets? Do they presume to speak differently from all other men even when it is not their main intention to philosophize? Did Joshua understand astronomy perfectly? Or, if he did, did his soldiers? Or, if he and his soldiers were well instructed in it, can it be said that they wanted to philosophize at a time when they were thinking only of fighting? Therefore, Joshua ought to have spoken as he did even if he and his soldiers had believed what is presently held by the ablest astronomers. However, the words of this great general, ''Sun, stand still upon Gibeon'' [Josh. 10:12–14] and what is said afterwards, that the sun stopped moving according to his command, persuades many people that the view that the earth moves is not only dangerous but absolutely heretical and untenable. They have heard it said that some pious people, for whom it is fitting to have a great deal of respect and deference, condemn this view; they know confusedly something of what happened to a learned astronomer of our own century because of this subject, and this seems sufficient to them for believing stubbornly that faith extends to this opinion. A certain confused opinion, excited and upheld by an impulse of fear of which they are hardly aware, causes them to take up a defiant attitude toward those who follow reason in these things within the province of reason. They regard them as heretics. They listen to them only with anxiety and some mental pain, and their secret apprehensions generate in their minds the same reverence for, and even submission to, these opinions (and for many others that are purely philosophical) as for the truths that are the object of faith.

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[a] Col. 2:22–23.

BOOK FOUR

Chapter Thirteen

I. The third natural inclination, which is our friendship for other men. II. It inclines us to approve the thoughts of our friends and to deceive them by false praise.

Of all our inclinations, taken in general and in the sense explained in the first chapter, there remains only the one we have for those with whom we live and for all the objects around us, of which I shall say but little because this concerns morals and politics rather than our present topic. As this inclination is always joined to the passions, it might be more appropriate to speak of it only in the following book; but in this, order is not of such great consequence.

I. The third natural inclination, which is our friendship for other men.

In order to understand the cause and the effects of this natural inclination, we must know that God loves all His works and that He joins them closely to one another for their mutual preservation. For, loving the works He produces (since it is His love that produces them), He also constantly imprints a love for His works in our hearts, because He constantly produces in our hearts a love similar to His own. And in order that the natural love we have for ourselves not nullify and weaken too much that which we have for things external to us but, on the contrary, that these two loves God has placed in us should uphold and strengthen one another, He has joined us in such a way with everything around us, and especially to beings of our own species, that their ills naturally afflict us, their joy pleases us, and their grandeur, their abasement, their decline, seem to augment or diminish our own being. New honors for our relatives and friends, new acquisitions by those most closely related to us, the conquests and victories of our prince, and even the recent discoveries of the New World, seem to add something to our substance. Being tied to all these things, we rejoice in their grandeur and scope; we would even have this world be unbounded. The view of certain philosophers, that the stars and vortexes are infinite, not only seems worthy of God but appears most agreeable to man, who feels a secret joy in being a part of the infinite, because, as tiny as he is in himself, it seems to him that he becomes like the infinite by expanding into the infinite beings around him.

It is true that our union with all the bodies turning in these great spaces is not very close. Hence it is not perceptible to most men, and there are those who have so little interest in the discoveries made in the heavens that we might well believe they are not united to them by nature did we not also know that this is either from lack of awareness or because they are too closely tied to other things.

The soul, although united to the body that it animates, does not always sense all the movements occurring in it; or if it senses them, it does not always consider them. Since the passion agitating the soul is often greater than the sensation affecting it, the soul seems to hold more closely to the object of its passion than to its own body; for it is principally through the passions that the soul is directed outside, and feels that it is effectively linked to everything around it. In the same way, it is principally by sensation that it is directed into its body, and recognizes that it is united to all the body's components. But just as we cannot conclude that the soul of an impassioned man is not united to his body because he risks death and is not interested in the preservation of his life, so we should not imagine that we are not naturally linked to all things because there are some things for which we show no concern.

Do you wish, for example, to know whether men are linked to their prince and country? Search out those who know the interests of both, and are not absorbed in their own particular affairs, and you will see how great their ardor is for news, their anxiety over battles, their joy at victories, their sadness at defeats. You will then see clearly that men are closely linked to their prince and to their country.

Similarly, would you like to know whether men are linked to China, Japan, the planets, and the fixed stars? Then search out, or imagine to yourself, some individuals whose country and family enjoy a sound peace, who do not have any particular passions, and who do not really feel the union that attaches them to things closer to us than the heavens, and you will recognize that if they have any awareness of the grandeur and the nature of these stars, they will rejoice should any stars be discovered. They will contemplate them with pleasure; and if they are sufficiently skillful, they will willingly take the trouble to observe them and to calculate their movements.

Those involved in the press of business hardly care whether some comet appears or an eclipse occurs; but those not so closely tied to things near them make a considerable fuss over these sorts of events because, indeed, there is nothing to which we are linked, although we are not always aware of it—just as we are not always aware that our souls are united, I do not say to our arm and hand but to our heart and brain.

The strongest natural union that God has established between us and His works is that which binds us to the people with whom we live. God commanded us to love them as we love ourselves; and in order to strengthen our voluntary love of them, He constantly supports and fortifies it by a natural love He impresses in us. For this reason He has established certain invisible bonds that oblige us as if necessarily to love them, to watch over their preservation as we do our own, and to regard them as necessary parts of the whole that we together compose, and without which we could not subsist.

There is nothing more admirable than these natural relations found among the inclinations of the minds of men, among the movements of their bodies, and between these inclinations and movements. This whole hidden concatenation is a marvel that cannot be sufficiently admired and could never be understood. At the sight of some evil that surprises us, or that seems insurmountable by our own power, we let out a great cry, for example. This cry, often uttered mechanically without thinking, unfailingly reaches the ears of those close enough to give the help we need. The cry penetrates them, and is heeded by people of whatever nation or rank; for this cry belongs to all languages and all conditions, as indeed it should. It agitates the brain, instantly changes the entire bodily disposition of those struck by it, and even makes them run to help without thinking. But it is not long before it acts upon their minds and forces them to want to help and to think of ways to aid him who uttered this natural prayer, always providing that this prayer, or rather this command, is just and in accord with the rules of society. For an improper cry, uttered without cause or from an unjustified fear, produces indignation or mockery instead of compassion in those who would help because, in crying out with no reason, one abuses things established by nature for our preservation. This improper cry naturally produces aversion, and the desire to avenge the wrong done to nature, i.e., to the order of things, if he who uttered it without reason did so voluntarily. But it should produce only the passion of *scorn*, mixed with some compassion, without aversion and without a desire for vengeance, if it is fright, i.e., the false appearance of an urgent need, that caused the cry—for the fearful need *scorn* to reassure and correct them, and the weak need compassion to help them—nothing better ordained can be conceived.

I do not claim to explain by one example which mechanisms [*ressorts*] and relations the Author of nature placed in the brains of men and in all the animals to maintain the harmony and union necessary for their preservation. I merely reflect on these mechanisms so that we might carefully consider and seek them, not how they operate or how their operation is communicated by air, light, and all the tiny bodies around us (for all that is nearly incomprehensible and is not necessary here), but in order that we should at least be able to recognize their effects. Through various observations we can recognize the ties that bind us to each other, but we cannot know with any precision how this occurs. It is not difficult to see that a clock marks the hours, but it takes time to understand the reasons; and there are so many different mechanisms in the brain of the smallest animals that there is nothing like it in the most complex machines.

If it is not possible to understand perfectly the mechanisms of our machine, neither is it absolutely necessary to understand them. But in order to conduct ourselves, it is absolutely necessary to know well the effects these mechanisms are capable of producing in us. It is not necessary to know how a watch is made to use it; but if one wishes to use it to regulate one's time, it is necessary at least to know that it marks the hours. Yet there are people who are so little capable of reflection that we might almost compare them to purely inanimate machines.

They do not sense the mechanisms within themselves that are released at the sight of objects; they are often agitated without perceiving their own impulses; they are slaves without being aware of their bonds. In short, they are conducted in a thousand different ways without recognizing the hand of Him who controls them. They think they are the sole authors of all the motion that they undergo and, not distinguishing what happens in them as a result of a free act of their will from what is produced in them by the impressions of bodies around them, they believe that they guide themselves when they are being guided by some other. But this is not the place to explain these things.

The relations that the Author of nature has placed among our natural inclinations in order to unite us with one another seem still more worthy of our study and inquiries than those among bodies, or among minds in relation to bodies. For they are ordered in such a way that the inclinations that seem most opposed to society are the most useful to it when they are slightly moderated.

For example, the desire all men have for grandeur tends by itself toward the dissolution of all societies. Nevertheless, this desire is tempered by the order of nature in such a way that it works to the good of the state much more than other weak and languid inclinations. For it gives rise to emulation, excites to virtue, sustains courage in the service of our country, and we would not win so many victories if soldiers and especially officers did not aspire to glory and command. Thus, all those composing armies, working only for their particular interests, nevertheless procure the good of the entire country. This demonstrates that it is most advantageous for the public good that all men have a secret desire for greatness, provided it be moderated.

But if all the individuals should seem to be what they really are, if they should say frankly to others that they want to be the principal part of the body they compose and never the least, this would not be the means of joining them together. Not all the members of a body can be its head and heart; there must be feet and hands, small as well as great, people who obey as well as those who command. And if each says openly that he wants to command and never obey, as indeed each of them does, it is obvious that every body politic would be destroyed, and that disorder and injustice would reign everywhere.

Therefore, it was necessary for those who are most intelligent and most fitted to become the noble parts of this body and to command others, to be naturally civil, i.e., to be led by a secret inclination to show others, through their manners, their courteous and honorable speech, that they think themselves unworthy of consideration, that they believe those to whom they speak are deserving of all sorts of honors, and that they have great esteem and veneration for them. Finally, in default of charity and love of order, it has been necessary for those who command others to have the art of deceiving them by an imaginary abasement that consists only in civilities and speech, in order that they might enjoy without being envied, that preeminence which is necessary in all bodies. For in this way all men possess in some way the greatness they desire—the great really possess it, and the insignificant and weak possess it only through imagination, being persuaded to some extent by the compliments of others that they are not regarded as what they are, namely the least among men.

From what we have just said, it is easy to conclude in passing that it is a most grievous fault against civility to speak of oneself frequently, especially in a flattering way, even though one has all sorts of good qualities, because it is not permissible to speak to those with whom one is conversing as if one regarded them as beneath oneself, except in special surroundings and when there are external and perceptible signs that elevate one above them. For in the end, contempt is the ultimate insult; it is the one most capable of rupturing society; and naturally we should not hope that a man whom we have made aware that we consider him beneath us can ever be joined to us, because men can never stand being the meanest part of the body they compose.

The inclination that men have for making compliments is therefore quite appropriate for counterbalancing the one they have for esteem and elevation, and for softening the internal pain felt by those who are the meanest parts of the body politic. And it cannot be doubted that the mixture of these two inclinations has good effects in the maintenance of society.

But there is an extreme corruption in these inclinations, as well as in friendship, compassion, good will, and the other inclinations that tend to unite men. What would support civil society is often the cause of its disunity and ruin; and, not to depart from my subject, it is often the cause of the communication and entrenchment of error.

II. This inclination leads us to approve of the thoughts of our friends and to deceive them by false praise.

Of all the inclinations necessary for civil society, those that most throw us into error are friendship, favor, gratitude, and all the inclinations that incline us to speak of others with too much flattery in their presence.

We set no bounds to our love in the person of our friends; together with them we love all the things that pertain to them in any way. And as they normally demonstrate sufficient passion in the defense of their opinions, we are inclined to believe them unthinkingly, to approve them, and even to defend them with greater obstinacy and passion than they do themselves. This is because they would often seem to be ill-mannered in the heated defense of their opinions, whereas we cannot be criticized for defending them. In them, this would be self-love; in us, it is generosity.

We bear affection for other men for several reasons, for they can please and serve us in various ways. The similarity of their temperaments, inclinations, functions, airs, ways, virtues, goods, the affection or esteem they show us, the favors that they have done for us or that we hope they will do for us, and several other particular reasons cause us to love them. Therefore, if it should happen that one of our friends, that is to say, some person who has the same inclinations as we, who is well-rounded, speaks in an agreeable manner, whom we believe to be virtuous or of significant station, who shows affection and esteem for us, who has done for us some favor, or from whom we hope to receive one or finally, who loves us for some other particular reason—if it happens, I say, that this person advances some proposition, we immediately allow ourselves to be persuaded without using our reason. We support his opinion without troubling ourselves about whether it is consistent with the truth, and often even in opposition to our own conscience, according to the obscurity and confusion of our minds, the corruption of our hearts, and according to the advantages we hope to draw from our false generosity.

It is not necessary to provide particular examples of these things here, for one hardly ever finds oneself in a group even for a single hour without noticing several of them if one wishes to reflect a little about it. Approval and laughter, as is commonly said, are only rarely on the side of truth, but almost always on the side of the people one loves. The speaker is obliging and civil; therefore, he is right. If what he says is merely probable, it is regarded as true; and if what he puts forth is absolutely ridiculous and foolish, it will become at least very probable. This is a man who loves me, who esteems me, who has done for me some favor, who has the disposition and power to do so again, who supported my views on other occasions; I would therefore be an ingrate and a fool if I were opposed to him, or even if I failed to applaud him. Thus do we make sport with the truth, making it serve our own interests and embracing each other's false opinions.

An honest man should not find fault with anyone for instructing and enlightening him when it is done according to the rules of civility; and when our friends are shocked when we modestly show them that they are mistaken, they must be permitted to love themselves and their mistakes, since that is what they want and since we do not have the power to command them or to change their minds.

But a true friend ought never to approve the errors of his friend, for in the end we must consider that we cause them to be even more mistaken than we think by defending their opinions indiscriminantly. Our applause only inflates their hearts and confirms them in their errors. They become incorrigible; in the end they act and make decisions as though they were infallible.

Why is it that the richest, noblest, most powerful, and generally all those who are raised above others, quite often believe themselves to be infallible, and comport themselves as though they were much more reasonable than those of a low or mediocre station, unless it is because we indifferently and loosely approve all their thoughts? Thus, the approbation we tender our friends gradually makes them believe that they are more intelligent than others, which makes them vain, bold, imprudent, and capable of falling into the grossest errors without being aware of it.

This is why our enemies often do us better service and enlighten our minds much more through their opposition than do our friends through their approval, because our enemies force us to be on guard, and pay attention to the things we put forth, which alone suffices to make us recognize our aberrations. But our friends merely lull us to sleep, giving us false confidence that makes us vain and ignorant. Men should therefore never admire their friends and yield to their opinions through friendship, and likewise they should never oppose those of their enemies because of enmity. But they should get rid of their tendencies toward flattery and contradiction in order to become sincere, and to approve clarity and truth wherever they find it.

We should also bear in mind that most men are inclined toward flattery, or toward paying us compliments, because of a sort of natural inclination to appear witty, to draw the good will of others toward themselves, and because they hope for some reward in return, or finally, because of a kind of malice and mockery. And we should never permit ourselves to be confused by anything they say to us: do we not see every day that people who do not know one another nevertheless praise each other to the skies the first time they meet and talk? And what is more common than seeing people give grandiloquent praise and express admiration by extraordinary gestures for a person who has just spoken in public, even in the presence of those with whom they have just mocked that person? No matter how many times someone cries out, pales with admiration, or is astonished at the things he hears, it is not a sound proof that the speaker utters marvels, but rather that he speaks to flatter, that he has friends, or perhaps enemies, who are diverting themselves with him. It is because he speaks in an engaging manner, or is rich or powerful; or, if you will, it is a sufficiently good proof that what he says is based upon the confused and obscure notions of the senses, [which are nonetheless] quite affective and agreeable—or because he has a lively imagination, since praise is given to friendship, riches, honors, to what seems to be true, and very rarely to the truth.

One might expect that having treated the inclinations of minds in general, I should now descend into the exact details of all the particular impulses they feel upon the perception of good and evil; i.e., that I should explain the nature of love, hatred, joy, sadness, and all the intellectual passions, whether general or particular, simple or complex. But I am not engaged in explaining all the various impulses of which minds are capable.

I am quite willing to have it known that my principal design in all I have written to date about the search after truth has been to show men their weakness and ignorance, and that we are all subject to error and sin. I have said it, and I say it again, so it may be remembered; I never planned to treat the basic nature of the mind. But I have been obliged to say something about it in order to explain errors at their source, to explain them in an orderly way; in a word, to make myself intelligible. And if I have crossed the boundaries I set myself, it is because I had, it seemed to me, new things to say that seemed consequential to me, which I even believed might be read with pleasure. Perhaps I was mistaken, but I had to have this presupposition in order to have the courage to write them; for what is the point of speaking with no hope of being heard? It is true that I have said many things that seem to belong less to the subject I am treating than to that of the soul's particular impulses. I admit this, but I do not consider myself obliged to anything when I set up an order for myself. I established an order to guide myself, but I hold that I am allowed to turn my head as I walk, if I find something that deserves to be considered. I even hold that it allows me to rest in certain places along the way, provided I do not lose sight of the road I must follow. Those who do not wish to pause with me are free to pass on; they are allowed to do so; they need only turn the page. But, should they be annoyed, let them know that many people find that the resting places I choose make the road smoother and more pleasant.

BOOK FIVE: THE PASSIONS

Chapter One

The nature and origin of the passions in general.

The mind of man has two necessary or essential relations, which are quite different from one another: the one to God, the other to its body. As a pure spirit [*pur esprit*], it is essentially joined to the Word of God, to eternal truth and wisdom, i.e., to sovereign reason, for only through this union is it capable of thought, as we have seen in the third book. As a human mind [*esprit humain*], it has an essential relation to its body, for it is due to the mind's union with the body that it senses and imagines, as we have explained in the first and second books. The mind is termed *sense* or *imagination* when its body is the natural or occasional cause of its thoughts, and it is called *understanding* when it acts by itself—or rather, when God acts in it and when His light illuminates it in various ways, with no necessary relation to what is occurring in the body.

The same is true of man's will. As a will, it depends essentially on the love God bears for Himself, and on the eternal law—in a word, on the will of God. Only because God loves Himself do we love anything, and if God did not love Himself, or if He did not continuously impress upon man's soul a love like His own, i.e., the impulse of love that we feel toward the good in general, we would love nothing, we would will nothing, and as a result, we would be without a will, since the will is only the impression of nature that leads us toward the good in general, as we have already said a number of times.

But the will, insofar as it is the will of a man, depends essentially on the body, for only because of motion in the blood, or rather in the animal spirits, does it feel excited by any of the sensible emotions. I have therefore called *natural inclinations* all the soul's impulses that we have in common with pure intelligences, as well as some of those in which the body has a role but of which it is only indirectly the cause and end, as I explained in the preceding book. Here I call *passions* all the emotions that naturally affect the soul upon occasion of extraordinary motion in the animal spirits. These sensible emotions will be the topic for this book.

Although the passions are inseparable from the inclinations, and although men are capable of a certain sensible love or hatred only because they are capable of a spiritual love or hatred, yet I thought that in order to avoid confusion it was proper to treat them separately. If you consider that the passions are much stronger and livelier than the natural inclinations, that they ordinarily have different objects, and that they are always produced by other causes, you will see that my separating things that by their nature are inseparable is not entirely unreasonable.

Men are capable of sensation and imagination only because they are capable of pure intellection, since the senses and the imagination are inseparable from the mind; yet no one finds anything amiss in treating these two faculties of the soul separately, though they are by nature inseparable.

Finally, the senses and the imagination differ no more from the pure understanding than do the passions from the inclinations. Thus, it was necessary to separate these latter two faculties, as the three former ordinarily are, in order the better to distinguish what the soul receives from its Author by way of relation to the body from what it has from Him independently of this relation. The only inconvenience naturally generated by this separation of two things that are by nature joined will be—as often happens in such cases—the necessity of repeating something that already has been said.

Although he is composed of several parts, man is a whole, and the union formed by his parts is so close that he cannot be affected in one place without the whole being disturbed. All his faculties are linked together and so structured that it is impossible to explain one of them without saying something about the others. Thus, while trying to establish an orderly plan for the purpose of avoiding confusion, I find myself forced to repeat things. But it is better to repeat than to confuse, because our first duty is to be intelligible, and in this case the best I can do is to repeat without boring the reader.

The *passions* of the soul are impressions from the Author of nature that incline us toward loving our body and all that might be of use in its preservation—just as the natural *inclinations* are impressions from the Author of nature that primarily lead us toward loving Him as the sovereign good and our neighbor without regard for our body.

The natural or occasional cause of these impressions is the movement of the animal spirits that are dispersed throughout the body in order to produce and maintain in it a disposition appropriate to the object we perceive, so that the mind and body might be of mutual help in dealing with it. For it is through this continuous action by God that our volitions are followed by all those movements in the body designed to carry them out, and that the movements of our body that are mechanically excited in us at the sight of some object are accompanied by a passion of our soul that inclines us to will what seems to be useful to the body.

It is this continuous and efficacious impression of the will of God on us that binds us so closely to one part of matter, and if this impression of His will should cease for but a moment, we would immediately be freed from our dependence upon the body and all the changes it undergoes. For I cannot understand how certain people imagine that there is an absolutely necessary relation between the movements of the spirits and blood and the emotions of the soul. A few tiny particles of bile are rather violently stirred up in the brain—therefore, the soul must be excited by some passion, and the passion must be anger rather than love. What relation can be conceived between the idea of an enemy's faults, or a passion of contempt or hatred, on the one hand, and the corporeal movement of the blood's parts striking against certain parts of the brain on the other? How can they convince themselves that the one depends on the other, and that the union or connection of two things so remote and incompatible as mind and matter could be caused and maintained in any way other than by the continuous and all-powerful will of the Author of nature?

Those who think that bodies of necessity and by themselves communicate their motion at the moment of their impact believe something having a certain plausibility. For in the final analysis, this prejudice[a] or error has a certain basis: bodies seem to be essentially related to bodies. But the mind and the body are two kinds of being so contrary to one another that those who believe that the soul's emotions necessarily follow the movement of the spirits and blood believe something without the faintest plausibility. Certainly, only our own inner experience of the union of these two beings and an ignorance of God's continuous operations on His creatures could make us imagine a cause of this union other than the always efficacious will of God.

It is difficult to determine for sure whether this relation or connection between the thoughts of man's mind and the movement of his body is a punishment of sin or a gift of nature, and some people believe it rash to embrace one of these views rather than the other. We know that before his sin man was not the slave but the absolute master of his passions and that with his will he could easily arrest the agitation of the spirits causing them. But I can hardly convince myself that the body of the first man did not urge his soul to look for things conducive to the preservation of his life. I can hardly believe that before his sin Adam did not find fruit pleasant to his sight and delicious to his taste according to what Scripture says on the matter, or that this remarkable harmony of the passions and senses, so precisely designed for the preservation of the body, should be a corruption of nature rather than its initial state.

At the present time nature is undoubtedly corrupted—the body acts too forcefully on the mind. Instead of humbly representing its needs to the mind, the body tyrannizes it and tears it away from God, to whom it should be inseparably united, and it unceasingly applies the mind to the search after sensible things that might be of use in its preservation. After the Fall, the mind became, as it were, material and terrestrial. The relation and close connection it had with God was lost, i.e., God withdrew from it as much as He could without losing and annihilating it. A thousand disorders have been the consequence of the absence of Him who preserves it in order, and without producing a longer list of our miseries, I grant that since his fall man is corrupt in all his parts.

But man's fall has not destroyed the work of God. What God first put in man can always be found in him, and His immutable will, which creates the nature of each thing, has not been changed at all by the inconstancy and fickleness of Adam's will. All that God willed then, He wills yet; and because His will is efficacious, He produces what He wills. Man's sin was indeed the occasion of that exercise of His will that produces the order of grace. But grace is not contrary to nature—the one does not overthrow the other because God does not struggle against Himself and never regrets anything; and since His wisdom has no limits, His works will have no end.

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[a] See below, bk. 6, pt. 2, ch. 3, "On method."

The exercise of God's will producing the order of grace, then, is added to that producing the order of nature in order to restore it, not to alter it. In God there are only two general volitions, and everything on earth governed by law depends on one or the other. It will be seen in what follows that the passions are well governed if they are considered only in relation to the preservation of the body, although they may deceive us in certain rare, particular cases that the universal cause has not willed to correct. It must be concluded, then, that the passions belong to the order of nature since they cannot belong to the order of grace.

True, if we consider that the first man's sin changed the union of soul and body with regard to [their order of] dependency, and has deprived us of the help of an omnipresent God who is always ready to defend us, we might say that sin is the cause of our attachment to sensible things, because sin has removed us from God, through whom alone we can be delivered from their servitude.

But without pausing further to inquire about the first cause of the passions, let us investigate their scope, nature, causes, end, use, defects, and all that they include.

BOOK FIVE
Chapter Two

The union between the mind and sensible objects, or the strength and scope of the passions in general.

If all the readers of this work would take the trouble to reflect a little on what they sense in themselves, it would not be necessary to pause here to show our dependence on sensible objects. I cannot say anything on this matter that everyone does not know as well as I do, provided they give it a little thought. This is why I would prefer to say nothing about it. But because experience teaches me that men often forget themselves so much that they do not think about what they sense, and do not inquire into the explanation of what takes place in their minds, I think I should say a few things here that might help them to think about these matters. I hope that even those who already know these things will not be bored with reading about them, for although we find no pleasure in simply hearing about what we already know, we always find pleasure in hearing about what we both know and sense.

That most honorable sect of philosophers, whose views people are still proud to embrace, would have us believe that our happiness depends only on ourselves.[a] The Stoics never stop telling us that we should rely only on ourselves, that we should not be distressed at the loss of our honor, our goods, our friends, our relatives, that we should always be calm and without the least concern, whatever may happen; that exile, injuries, insults, sickness and even death are not evils, and that we should not fear or flee from them. In short, they tell us an infinity of such things that we are led to believe as much for the reason that our pride makes us love independence as because reason instructs us that indeed the greater part of the evils that really afflict us would not be capable of afflicting us if everything were in order.

But God has given us a body, and by this body has joined us to all sensible things. Sin has subjugated us to this body and by it has made us dependent on all sensible things. It is the order of nature and the will of the Creator that all the beings He has created should depend on one another. We are to some extent joined to the entire universe, and it is the first man's sin that has made us dependent on all those beings to which God had but joined us. Thus, there is now no one who is not both joined and subjugated to his body and through his body to his relatives, friends, city, prince, country, clothes, house, land, horse, dog, to the entire earth, the sun, the stars, to all the heavens.

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[a] Tunc beatum esse te judica, cum sibi ex te gaudium omne nascetur: cum in his quae homines eripiunt, optant, custodiunt, nihil inveneris, non dico quod malis, sed quod velis.'' Sen. *Ep.* 124.

It is therefore ridiculous to tell men that it is up to them to be happy, wise, and free, and to advise them seriously not to be upset at the loss of their friends or goods is to mock them. For just as it is ridiculous to advise men not to feel pain when they are struck or not to take pleasure in eating while hungry, so the Stoics are wrong; or perhaps they are joking with us, when they exhort us not to be afflicted at the death of a father, the loss of our goods, exile, prison, and other such things, nor to be delighted with good success in our business, for we are tied to our country, our goods, our parents, and so on, by a natural union that does not now depend on our will.

I grant that reason teaches that we ought to suffer exile without sadness, but this same reason teaches us that we should not feel pain when our arm is cut off. The soul is superior to the body, and, according to the light of reason, its happiness or unhappiness should not depend on the body. But experience sufficiently shows us that things are not as reason says they should be, and it is ridiculous to philosophize against experience.

Christians do not philosophize in this way. They do not deny that pain is an evil, that there is pain involved in being separated from things to which we are joined by nature, and that it is difficult to rid ourselves of the slavery to which sin has reduced us. They agree that it is a disorder for the soul to depend on its body; but they recognize that it does depend on the body, and in such a way that it can be freed from its dependence only through the grace of JESUS CHRIST: "I feel in my body a law that wars against the law of my mind, making me a slave to the law of sin that is in my members. Unhappy man that I am, who will deliver me from this body of death? The grace of God through Jesus Christ our Lord will be my deliverance" [Rom. 7:23–25]. The Son of God, His apostles, and all His true disciples ask us above all to be patient, because they know that the desire to live righteously involves great suffering. In short, true Christians or real philosophers say nothing that disagrees with common sense or experience; but all of nature continually undermines the views, or the pride, of the Stoics.

Christians know that to be freed at all from their present state of dependence they must strive to abstain from all those things they cannot possess without pleasure or be deprived of without pain, and that this is the only way to preserve the peace and freedom of mind that they have received through the grace of their Liberator. The Stoics, on the other hand, following the false ideas of their chimerical philosophy, imagine that they are wise and happy and that one need only think about virtue and independence in order to become virtuous and independent. Common sense and experience assure us that the best way of not being hurt with the pain of a pinprick is not to prick oneself. But the Stoics say, go ahead and prick me, and through the strength of my mind and with the aid of my philosophy, I will so separate myself from my body that I shall not be bothered by what happens to it. I have conclusive proofs that my happiness in no way depends on the body, and that pain is not an evil, and you will see from the look on my face and from the firm bearing of the rest of my body that my philosophy makes me invulnerable.

Their pride sustains their courage, but it does not prevent them from actually suffering pain with uneasiness, and from being miserable. Thus, the union they have with their body is not destroyed, nor does their pain vanish; rather it is a matter of the union they have with other men (strengthened by the desire for their esteem) undermining to a certain extent the union they have with their own bodies. The sight of their associates looking at them arrests the flow of the spirits accompanying pain and erases the appearance that pain imprints on their face; for if no one were looking at them, this look of determination and freedom of mind would soon vanish. Thus, the Stoics to a certain extent undo the union they have with their body only by making themselves greater slaves to other men, to whom they are tied by the passion for glory. It is a certain truth, then, that all men are tied by nature to every sensible thing, and that through sin they are dependent on them. We see this clearly enough through experience, though reason seems to disagree, and practically all of men's actions are conclusive, visible proofs of it.

This union, which is common to all men, is not of equal extent or strength in all men. For as this union depends on the mind's knowledge, it might be said that we are not tied to objects we have no knowledge of. A peasant in his cottage takes no part in the glory of his prince and country, but only in the glory of his own and neighboring villages, because his knowledge extends no further.

First, the soul's union with the sensible objects we have seen and tasted is much stronger than its union with those it has only imagined or heard about. We are more closely tied to sensible things by sensation, because sensation almost always produces much greater traces in the brain and excites more violent motion in the spirits than does the imagination alone.

Second, this union is not as strong in those who continually struggle against it in order to devote themselves to the good of the mind as it is in those who follow the impulses of their passions and let themselves be subjugated to them, for cupidity increases and strengthens it.

Finally, men's different occupations and stations in life, as well as the different disposition of their spirits, make a considerable difference in the sensible union they have with terrestrial good. Great men depend on more things than do others, and their slavery is of greater extent. The general of an army depends on all his soldiers because they all hold him in esteem. Often it is this very slavery that produces his valor, and the desire for the esteem of those who have him in view often forces him to sacrifice other, more reasonable, and more pressing desires. The same is true of all superiors and those in places of importance in the world. Often their vanity spurs their virtue, because the love of glory is generally stronger than the love of truth and justice. I am speaking here of the love of glory, not as a simple inclination, but as a passion, because this love can indeed be sensible and because it is often accompanied by very strong and violent disturbances in the animal spirits.

Differences in age and sex are additional principal causes of the difference in men's passions. Children do not like the same things that grown men and old folk do; or they do not like them with as much strength and constancy. Women are often involved only with their family and neighborhood, whereas men are involved with their whole country—it is up to them to defend it, and they enjoy great responsibility, honors, and authority.

There are such great differences in the occupations and circumstances in which men find themselves that they cannot all be explained. The disposition of the mind of a married man is not the same as that of a single man. Thinking about his family occupies him almost entirely. Religious have neither a mind nor a heart of the same bent as men in the world, nor even as ecclesiastics; they are tied to fewer things, but naturally are more closely attached to them. We might go on speaking in general about the states men find themselves in, but we could not explain in detail all the minor involvements that differ for almost every individual person, for it happens often enough that men have particular involvements completely contrary to those they should have in relation to their condition. But although we might give a general account of the different characteristics of mind and the different inclinations of men and women, of old folk and youngsters, of the rich and the poor, of the learned and the ignorant, and finally of different sexes, different ages, and different occupations, still these things are too well known to everyone who lives in this world and thinks about what he sees to fatten this book with them. We need only open our eyes to be soundly and pleasantly instructed in these matters. For those who prefer to read about these things in Greek rather than learning about them by reflecting upon what happens right in front of their eyes, they can read book two of Aristotle's *Rhetoric*. I think that this is his best work because in it he says few things about which one could be mistaken and seldom risks a proof of what he asserts.

It is evident, then, that this sensible union between the mind of men and whatever is related to the preservation of their life or of the society of which they are considered members is different in different people, since it is of greater extent in those of greater knowledge, better circumstances, higher station, and whose imagination is of wider scope, and is limited but stronger in those who are more involved with the senses, who have a livelier imagination and who more blindly follow the impulses of their passions.

Frequent thought about the almost infinite ways in which men are tied to sensible objects is of great use, and one of the best ways of becoming knowledgeable in these matters is to study and observe ourselves. Through the experience of what we perceive there, we instruct ourselves with complete certainty about all the inclinations of other men, and we have fairly certain knowledge of a large part of the passions to which they are subject. But if we add to this experience the knowledge of the particular circumstances men find themselves in, and a knowledge of the judgments belonging to each of the passions that we shall discuss in what follows, we perhaps shall have less difficulty in guessing most of their actions than astronomers do in predicting eclipses. For though men are free, they very rarely use their freedom against their natural inclinations and violent passions.

Before finishing this chapter, I must point out that one of the laws concerning the union of the soul and body is that all the soul's inclinations, even those it has for goods that are unrelated to the body, are accompanied by disturbances in the animal spirits that make these inclinations sensible; <this is so> because given that man is not a pure spirit, he cannot have an entirely pure inclination unmixed by some passion, whether great or small. Thus, the love of truth, justice, virtue, or of God Himself is always accompanied by motion in the spirits that makes this love sensible, although we are not aware of this because we almost always have other, livelier sensations—just as our knowledge of spiritual things is always accompanied by traces in the brain that makes this knowledge livelier, though generally more confused. It is true that we often do not realize that we are to some extent using our imagination while we are conceiving an abstract truth. The reason for this is that these truths have no images or traces established by nature to represent them, and that all the traces they do arouse have no relation to them other than that established by chance or the will of man. For arithmeticians, and even the analysts, who deal only with abstract things, make great use of their imagination in order to fix their mind's perception on their ideas. The numbers, letters of the alphabet, and other figures they see or imagine are always joined to the ideas they have of things, although the traces formed by these characters have no relation to them and thus cannot make them false or indistinct. This enables them to discover by an orderly use of numbers and letters very difficult truths that could not otherwise be discovered.

Given that the ideas of things perceivable only by the pure mind can be linked to traces in the brain, and that the sight of objects we love, hate, or fear through natural inclination can be accompanied by motion in the spirits, clearly the thought of eternity, the fear of hell, and the hope for eternal bliss (although these are objects that do not strike the senses) can excite violent passions in us.

We can therefore say that we are bound in sensible fashion not only to everything related to the preservation of life but also to spiritual things, to which the mind by itself is immediately linked. It even happens quite often that faith, charity, and self-love make this union with spiritual things stronger than the one we have with all sensible things. The souls of the true martyrs were in closer union with God than with their bodies, and those who die in order to affirm a false religion they hold to be true show that the fear of hell has greater power over them than the fear of death. Often there is so much heated obstinancy on both sides in wars of religion and in the defense of superstitions that some passion must undoubtedly be involved—and even a passion firmer and more constant than all others, because it is sustained by the appearance of truth, as much in those who are in error as in those who are right.

We are bound by our passions to everything that seems to be either good or bad for the mind as well to everything that seems to be either good or bad for the body. Everything we can know to be related to us is capable of exciting us; and none of the things we know is unrelated to us. We always take some interest in even the most abstract truths when we know them because there is at least this relation between them and our mind, that we know them. They are ours, as it were, by virtue of our knowledge of them. We feel we are wounded when they are attacked, and if we are wounded, certainly we are moved and made uneasy. Thus, the passions hold such vast and extensive sway that nothing can be conceived with regard to which it might be said that all men are free from their dominance. But let us now take a look at their nature and attempt to discover everything they include.

BOOK FIVE
Chapter Three

A particular explanation of all the changes happening to the body and the soul during the passions.

Seven things can be distinguished in each of our passions, except for wonder, which is only an imperfect passion.

The first thing is the mind's judgment about an object, or rather, its perception, distinct or confused, of the relation an object has to us.

The second is the actual determination of the will's impulse toward this object, assuming that the object is, or appears to be, a good. Before the mind perceives the object's relation to us, either the soul's natural impulse is undetermined, i.e., it tends toward good in general, or else it is determined in some other direction by the knowledge of some other particular object. But as soon as the mind perceives the relation this new object has to it, the general impulse of the will is immediately restricted to what the mind perceives. The soul is drawn to this object by its love in order to experience it and to enjoy its good through the sensation of delight the Author of nature gives it as a natural reward for its seeking the good. It judges that the object is a good on the basis of an abstract consideration that does not affect it; but it remains convinced of it because of the efficacy of sensation, and the livelier the sensation, the more it is attached to the good that seems to produce it.

But if this particular object is viewed as evil, or as capable of depriving us of some good, no new determination of the will's impulse occurs, but only an increase in the impulse toward the opposite good, which increase is as great as the evil appears dreadful. For in fact we hate only because we love, and the external evil is judged evil only in relation to the good of which it deprives us. Thus, since evil is considered as the privation of good, to flee evil is to flee the privation of good, i.e., to tend toward the good. No new determination of the will's natural impulse occurs, then, when an object is encountered that displeases us, but only a sensation of pain, disgust, or bitterness that the Author of nature inflicts on the soul as a natural punishment for its being deprived of the good. Reason alone is not enough to move it—this painful and distressing sensation is needed to arouse it.[a] Thus, for all the passions, the soul's impulses toward the good are but impulses of love. But because we are affected by different sensations according to the different circumstances accompanying both our perception of the good and the soul's impulses toward the good, we confuse these sensations with the soul's emotions and imagine as many different impulses in the passions as there are different sensations.

Now it should be pointed out here that pain is a real and true evil, and that it is no more the privation of pleasure than pleasure is the privation of pain, for there is a difference between not feeling pleasure or being deprived of the sensation of pleasure and actually suffering pain. Thus, not every evil is an evil just because it deprives us of good, but, as I have explained, only that evil which is external to us and which is not a mode in us. But since we ordinarily mean by goods and evils good and evil things and not sensations of pleasure and pain, which are rather the soul's natural signs for distinguishing good from evil, we seemingly might say without fear of equivocation that evil is but the privation of good, and that the soul's natural impulse away from evil is the same as its impulse toward good. For in the end, given that every natural impulse is an impression by the Author of nature, who acts only for Himself, and who can turn us only toward Himself, the true impulse of the soul is always essentially the love of good and only accidentally flight from evil.

It is true that pain may be considered an evil, and in this sense the impulse of the passions it excites is not real, for we never will pain; and if we positively will the absence of pain, we do so only because we positively will the preservation or perfection of our being.

The third thing we can note in each of our passions is the sensation accompanying them—a sensation of love, aversion, desire, joy, or sadness. These sensations always differ from one passion to another.

The fourth thing is a new determination of the flow of the spirits and the blood toward the external and internal parts of the body. Before we see the object of a given passion, our animal spirits are dispersed throughout the entire body in order to preserve all its parts generally; but when a new object is present, this entire balance is upset. Most of the spirits are driven into the muscles of the arms, legs, and face and all the exterior parts of the body in order to suit it to the dominating passion, and to give it the bearing and motion necessary to acquire the good or flee the evil presenting itself. But if a man's strength is not sufficient to his needs, these same spirits are distributed in such a way that they cause certain words and cries to be uttered mechanically, and they spread out over his face and the rest of his body a certain appearance capable of exciting in others the same passion by which he is moved. For since all men and all animals are in communion through their eyes and ears, when someone is in a state of agitation, he necessarily disturbs everyone who sees or hears him, and he naturally makes an impression on their imagination that disturbs them and interests them in his preservation.

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[a] Before <Original> Sin, this sensation was not a punishment but only a warning, because, as I have already said, Adam then could arrest at will the motion of the animal spirits causing pain. Thus, if he felt pain, he himself willed it, or rather, he did not feel pain because he willed not to feel it.

As for the rest of the animal spirits, they violently descend into the heart, lungs, liver, spleen, and other viscera, to enlist their aid and to speed them in quickly supplying the spirits necessary to preserve the body in the extraordinary action it takes in acquiring some good or fleeing some evil.

The fifth thing is the sensible emotion of the soul, which feels itself moved by the unexpected flow of spirits. This sensible emotion of the soul always accompanies this particular movement of the spirits in order that the soul may be involved in everything affecting the body—just as motion in the spirits is stirred up as soon as the soul is moved toward some object. Since the soul is joined to the body and the body to the soul, their motions are reciprocal.

Sixth are the different sensations of love, aversion, joy, desire, sadness caused not by the intellectual perception of good or evil, like those just mentioned, but by the different disturbances that the animal spirits cause in the brain. These latter sensations are much more lively.

The seventh is a certain sensation of joy, or rather of inner delight, that fixes the soul in its passion and assures it that it is in the proper state with regard to the object it is considering. This inner delight accompanies all the passions—those springing from the perception of some evil as well as from the perception of some good, sadness as well as joy. This delight makes all our passions pleasant, and leads us to consent to them and give ourselves up to them. Finally, it is this delight that must be overcome by the delight of grace and the joy of faith and reason. For as joy of mind always results from the certain knowledge that we are in the best possible state with regard to the things we perceive, so the delight of the passions is a natural consequence of our confused sensation that we are in the best possible state with regard to the things we sense. Now the false delight of our passions, which makes us slaves to sensible goods, must be overcome by joy of mind and the delight of grace.

Everything we have just mentioned is found in each of the passions, unless they are excited by confused sensations and the mind perceives nothing good or bad that might be causing them; for in that case, the first three things are not to be encountered.

We also see that all these things are involuntary, that they are in us without our doing, and even, since the Fall, in spite of us, and that only the consent of our will truly depends on us. But it seems appropriate to explain these things at greater length, and to illustrate them with a few examples.

Let us suppose that some man is being insulted, or that because he has an imagination that is strong and lively or that is aroused by some circumstance such as sickness or a reaction to grief and sadness, he is sitting at home imagining that someone (who is not even thinking about him) is ready and willing to cause him harm. The sensible perception or the imagining of the relation between his enemy's actions and his own intentions will be the first cause of his passion.

It is not even absolutely necessary that this fellow actually receive, or imagine receiving, some insult, or imagine encountering opposition to his intentions in order that the impulse of his will should receive some new direction; it is enough that he should think this with the mind alone, completely independently of the body. But as this new direction would be not a direction of passion but a very weak and languid pure inclination, it must be assumed that he feels his intentions strongly opposed, or that he imagines they will be, rather than making some other supposition on which the senses and the imagination have little or no role in his knowledge.

The second thing to be considered in the passion of this fellow is an increase in the soul's impulse toward the good, which his real or imagined enemy would prevent him from possessing, and this increase is as great as the supposed opposition appears to him strong. He immediately hates his enemy only because he loves the good, and his hatred is as great as his love is strong, because the impulse of his will in the passion of hatred is only an impulse of love, since the soul's impulse toward the good is not different from its impulse to flee the privation of good, as we have already said.

The third thing is the sensation appropriate to the passion in question, in this case a sensation or feeling of hatred. The impulse of hatred is the same as that of love, as each of us is capable of knowing from his own experience. Impulses are actions of the will; sensations are modifications of the mind. The will's impulses are the natural causes of the mind's sensations,and these sensations of the mind in turn support the determination of the will's impulses. In the fellow of our example, the sensation of hatred is a natural consequence of his will's impulse that is excited by the perception of evil, and this impulse is then supported by the sensation it causes.

What we have just said about this man could happen to him even if he had no body; but because he is composed of two parts that are naturally joined, the impulses of his mind are communicated to his body and those of his body are communicated to his mind. Thus, this new determination of his will's impulse naturally produces a new determination of the motion of the animal spirits, which differs for each of the passions, although the impulse of the soul is almost always the same.

The spirits are therefore driven into the arms, legs, and face to provide the body with the disposition necessary for the passion, and to spread on the face the look of an injured man in relation to the circumstances of the injury and the worth or influence of the two men involved. This flood of spirits is all the more heavy, strong, and quick as the good is, or appears, greater, and the opposition is stronger as the brain is more forcefully struck.

If, then, the person we are talking about receives some injury only in his imagination, or an injury that is real but slight, and that causes no great disturbance in his brain, the flow of animal spirits will be weak and languid, and perhaps will not be great enough to alter the body's ordinary natural disposition. But if the injury is atrocious and occurs while his imagination is aroused, there will be a great disturbance in the brain and the spirits will be dispersed with such force that they will almost immediately form on his face and body the look and bearing of the passion dominating him. If he is strong enough to prevail, his air will be proud and menacing. If he is weak and unable to resist the evil about to overwhelm him, his appearance will be humble and submissive. His groans and tears naturally arouse impulses of compassion in onlookers and even in his enemy, and from them they extract help that he could not expect from his own resources. It is true that if the spirits and the fibers of the brain of the onlookers and of the enemy of this unhappy man are already disturbed by a motion that is both violent and contrary to the one breeding compassion in the soul, his groans will only increase this motion and his misery will be inevitable, and this is the case as long as he maintains the same look and bearing. But nature has provided well for him, for at the prospect of losing a great good, the face naturally takes on aspects of rage and despair so lively and unexpected that they disarm the most impassioned men and, as it were, immobilize them. This terrible and unexpected view of death's trappings painted by the hand of nature on the face of an unhappy man arrests the vengeance-provoking motion of his enemy's spirits and blood; at this moment of favourable supplication, nature is retracing the humble and submissive look on the face of the unhappy man, who begins to have hope on account of his enemy's immobility and the change in his air, and the animal spirits of his enemy receive a determination they could not have had a moment before. As a result of this, he is mechanically taken by impulses of compassion, which naturally incline his soul to accede to motives of charity and mercy.

It should be noted here that the soul has no part in this mechanical activity, which is solely the natural and necessary effect of the admirably wise construction of our bodies. For God in His infinite wisdom placed in them all the springs or principles of action needed for their preservation. They would soon be destroyed if they depended on our care and vigilance, whatever our knowledge of what takes place in them might be. It is true that sensations and impulses of the soul always accompany disturbances in the brain's fibers and the flow of animal spirits, but they are not the cause of these disturbances. For besides the fact that we cannot conceive how a sensation of the soul could move a body, it is certain that when the soul is moved by some passion, not only is it not thinking that there are animal spirits, muscle, and nerves in its body, or about their use—it does not even know what bearing it should give to its body or what look it should form on its face. It is not even aware of this look, though it is actually formed, unless a mirror is present or a friend tells it about it. Finally, it is certain that the soul cannot often prevent the operation of its machine, however it might resist, and that the soul can make it operate in a different way only when it has the power of vividly imagining another object whose open traces <in the brain> make the animal spirits take another course. This is the only means the soul has of arresting the effects of its passions. It is clear, therefore, that although the soul is necessarily present to the operation of its machine, and although it is moved by its machine as a result of the laws concerning its union with the body, it has no part at all in its different movements, of which it is in no way the true cause.

It follows from what I have just said that the reasons generally given to prove that beasts have a soul prove nothing at all or else just the opposite of what they were intended to prove. Dogs cry out, they say, when they are injured; therefore, they have a soul. According to what I have just said, they should conclude from dogs' crying out that they have no soul, for a cry is a necessary effect of their machine's construction. When a man in full health fails to cry out when he is injured, it is a sign that his soul is resisting the operation of its machine. If he had no soul and if his body were in the right state, certainly he would always cry when injured. When our arm is to be bled, we all feel it withdraw mechanically when it is pricked—unless the soul is there to resist. Now the movement of the diaphragm and of several other muscles required for crying out partially depends on the soul as much as those of the arms do. Thus, when a man is injured and does not cry out or shrink back, it is because he has a soul that opposes the action of its machine. The opposite case with beasts does not prove, then, what it is intended to prove.

But, they continue, animals catch their prey and act with as much and more adroitness than do men. I concede that their machine operates even better than does ours; but that is because nothing interferes with its action. This is so because they have no soul, and, as a result, no impulse contrary to those excited in them by the presence of objects as a result of the remarkable construction of their body by Him whose wisdom knows no limits. An extreme effect of prejudice it is to propose as a proof an opinion that is basically more appropriate to destroying it than establishing it.

I would be straying too far from my topic were I to linger any further with the defenders of the bestial soul; I would do better here to try to show them the cause of their prejudice. First, we do not now and never shall know precisely the particles of which the brain is composed (and still less their functions), or their different connections: on one side to the organs that receive impressions from objects, and on the other to all the parts of our body; second, our soul cannot exist without actually sensing itself; for these reasons, the soul has trouble in attributing to the construction of its body, which is actually unknown to it and which it does not consider, the effects that really depend on it. The soul is led to judge that only it is their cause, because only it is actually present to the body and because it cannot exist without thinking about itself. This prejudice is further confirmed by the fact that some impulses take place in us that depend on our will, and of which we consequently take ourselves to be the true cause. For from this we judge that it is our soul that preserves life in the body, and that generally produces in it all the impulses that tend toward the preservation of life. Thus, since we see that animals act as we do to preserve themselves and their species, we attribute to them a soul that we unjustifiedly believe to be the principle in us of all our movement. And because we naturally humanize all causes, and furthermore because a soul that does not will, think, and sense is unthinkable, we judge that our dog knows and loves us, and feels pain like our own when injured. As God has created the dog especially for man, He placed in the dog, in order that man might naturally team up with his dog, a disposition to make certain contortions and movements of the head, back, and tail, which though they are of themselves in no way related to the soul's thoughts, naturally engender in man the thought that his dog loves and cares for him. These, it seems to me, are the main causes of our prejudice that beasts have a soul, a prejudice that is very dangerous in view of its consequences, as I have proved elsewhere.[a]

Let us glorify God and let us recognize that in His limitless wisdom He placed in all the animals every principle of action necessary for the preservation of their life and for the propagation of their species, and that even in the first animals[b] and the first plants He placed infinitely small embryos that He foresaw would grow and develop as a result of the laws of motion in such a way as to preserve their species for all time. We shall then not indiscretely limit the wisdom of the Creator, which we verbally admit to be infinite, but which our mind infinitely degrades by our natural tendency toward humanizing it as well as by our tendency to judge that what we cannot comprehend is absolutely impossible for Him. Also, we shall not fall into the opposite error of attributing to creatures what cannot belong to them. For indeed, to give souls to beasts for the reason that their actions are marked by skill and intelligence is an extreme neglect of God that attributes to his work the wisdom of the workman. When we carefully examine what takes place at each instant in human and animal bodies, we discover in them such a great variety of precise and regular motion that we cannot believe a finite mind could understand them or control them for a moment; and if the supposed soul of beasts caused and regulated the operation of their machine upon perception of objects, they surely would have an infinitely greater mind than ours. For without taking account of the infinite movements that take place in us independently of us, our soul is not even the true cause of those that follow our volitions. We will to speak or sing but we do not even know what muscles must be moved to do either.

Undoubtedly everything God has created is marked by intelligence. We sow a grain of wheat upside down, and the root grows reversing itself toward the earth and the stem toward the air, and this indicates intelligence; the stem at first grows joints in order to fortify itself against the stresses of the wind, and this indicates foreknowledge of a future event; toward the bottom these joints are closer to one another than toward the top, because according to the rules of mechanics, the stress of the wind that it must resist is greater at the bottom; the stem is hollow because in order to remain secure it must greatly decrease its weight without decreasing its strength at all or only a little. All these and an infinity of other movements that are invisible and perhaps unknown to pure intelligences indicate an infinitely great mind. But certainly, neither a grain of wheat nor anything else from the world of chimeras that a fertile imagination could add to it in order to make it grow could forsee the future stresses of the wind or have natural knowledge of mechanics. This grain of wheat and its way of growing and producing others like itself show the infinite wisdom of the Creator; let this be an occasion for our admiration and adoration, but let us not attribute to the work, or to souls and chimerical forms, the least part of what can belong only to the workman. I shall now return to the topic.

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[a] *Défense contre l' accusat. de M. de la Ville* and above, bk. 2, ch. 4.

[b] See the last Elucidation of this work, near the end.

A man in passion cannot without a great abundance of spirits produce or preserve in his brain a lively enough image of his misery or a disturbance strong enough to give his body a strained bearing. Hence, the corresponding nerves in the body of this person receive upon the perception of some evil the jolts and agitations required to make the humors, which produce the spirits passion demands, flow into all the vessels leading to the heart. For since the animal spirits are dispersed in the nerves leading to the liver, spleen, pancreas, and to all the viscera in general, they agitate and disturb them, and by means of their agitation they extract the humors that these parts maintain for the needs of the machine.

But if these humors always flowed into the heart in the same way, if they received a similar fermentation from it at different itmes, and if the spirits formed from them also flowed into the brain, such quick changes would not be seen in the impulses of the passions. The sight of a magistrate, for example, would not instantaneously stop the outbursts of an enraged person seeking vengeance, and his face flushed with blood and spirits would not immediately become deathly pale for fear of some punishment.

Thus, in order to prevent these humors that are mixed with blood from always entering the heart in the same way, there are nerves surrounding its arteries that, being contracted and relaxed by the impression produced in the spirits by perception of the object and the power of the imagination, open and close the way to these humors. And to prevent the same humors from receiving a similar agitation and fermentation in the heart at different times, there are other nerves that cause its beating; and given that these nerves are not equally agitated with the different movements of the spirits, they do not force the blood into the arteries with the same strength. Other nerves spread through the lungs distribute air to the heart by contracting and relaxing the branches of the canal used in breathing, and in this way regulate the fermentation of the blood with regard to the circumstances of the predominant passion.

Finally, in order to regulate the flow of spirits more accurately and more quickly, there are nerves surrounding the arteries both of those leading to the brain as well as of those carrying the blood to all the other parts of the body. As a result of this, the disturbance in the brain accompanying the unexpected perception of some state of affairs that calls for a change in the prevailing passions suddenly determines the flow of spirits toward the nerves surrounding these arteries so that through their contraction the blood's passage to the brain might be closed and that by relaxing them passage might be opened to the blood spread out in all the other parts of the body.

When the arteries carrying the blood toward the brain are open and all the others spread throughout the rest of the body are tightly tied off by these nerves, the head should be full of blood and the face inflamed. But when some state of affairs changes the disturbance in the brain causing this disposition in these nerves, the closed arteries are loosened and those in the brain are tightly constricted. Then the head is devoid of blood, a pallor spreads across the face, and the little blood leaving the heart that the aforementioned nerves let pass in order to maintain life descends almost entirely to the lower parts of the body. The brain then lacks animal spirits, and the rest of the body is seized with weakness and trembling.

In order to give a detailed explanation and proof of all the things we have just said it would first be necessary to provide a general survey of physics and then a very precise account of the human body. But these two sciences are and always will be too imperfect to maintain the precision that I would want—besides which, if I were to push this matter any further I would soon be led away from my present topic; for here it is enough that I should give a rough and general idea of the passions, provided that that idea not be false.

These disturbances of the brain and movements of the blood and spirits are the fourth thing found in each of our passions, and they produce the fifth, which is the sensible emotion of the soul.

At the moment when the animal spirits are forced from the brain into the rest of the body to produce in it the motion appropriate to sustain passion, the soul is driven toward the good it perceives, and the soul is the more driven as the spirits leave the brain with greater force because the same disturbance agitates the soul and the animal spirits.

The soul's impulse toward the good is all the greater as its perception of the good is more sensible; and the movement of the spirits leaving the brain to be distributed throughout the rest of the body is all the more violent as the disturbance of the brain's fibers caused by the impression of the object or by the imagination is stronger. Thus, with this same disturbance of the brain making the sight of the good more sensible, the soul's emotion during passion must increase in direct proportion to the movement of the spirits.

These emotions of the soul are not different from those that follow immediately upon the intellectual perception of the good that we have spoken about except they are livelier and stronger because of the union of the soul and body, and because the perception producing them is sensible.

The sixth thing to be found is the sensation of passion, a feeling of love, aversion, desire, joy, or sadness. The sensation is not different from the one we have already spoken about, except it is livelier because the body has a great part in it. However, it is always followed by a certain sensation of delight that makes all our passions pleasant for us. This is the last thing found in each of our passions, as already indicated.

The cause of this latter sensation is as follows. Upon perceiving the object of the passion or some new state of affairs, part of the animal spirits are forced from the head toward the exterior parts of the body in order to give it the bearing demanded by the passion, while other spirits descend violently into the heart, lungs, and viscera, and draw from them the necessary assistance, as we have already sufficiently explained. Now it never happens that, with the body in the state proper to it, the soul does not receive a great deal of satisfaction, and it never happens that, with the body in a state contrary to its own good and preservation, the soul does not suffer a great deal of pain. Thus, when we follow the impulses of our passions and do not arrest the flow of the spirits that the perception of the object of passion causes in our body (in order to place it in its proper state in relation to the object), the soul through the laws of nature receives this sensation of delight and inner satisfaction because the body is in the state in which it belongs. On the other hand, when the soul following the rule of reason arrests the flow of spirits and resists the passions, it suffers pain in proportion to the harm that may thereby happen to the body.

For just as the soul's reflection on itself is necessarily accompanied by mental joy or sadness and then by sensible joy or sadness when in the performance of its duty and in its submission to God's commands it realizes that it is in its proper state, or when giving way to its passions it is affected by the remorse that informs it that it is in an improper state—so the flow of spirits excited for the good of the body is accompanied by sensible joy or sadness and then by mental joy or sadness, depending on whether the flow of animal spirits is hindered or encouraged by the will.

But there is this noteworthy difference between the intellectual joy accompanying the clear knowledge of the soul's proper state and the sensible pleasure accompanying the confused sensation of the body's proper state. Intellectual joy is stable, without remorse and as immutable as the truth causing it, whereas sensible joy is almost always accompanied by sadness of mind or remorse of conscience, is unsettled, and is as inconstant as the passion or the agitation of the blood producing it. Finally, the former is almost always accompanied by very great sensible joy when it is a consequence of knowing some greater good possessed by the soul, whereas the latter is almost never accompanied by any joy of the mind, though it might be a consequence of something very good for the body but contrary to the good of the soul.

It is nonetheless true that without the grace of Jesus Christ, the delight the soul takes in yielding to its passions is greater than that which it experiences while following the rules of reason, and it is this delight that is the source of all the disorders that have resulted from Original Sin and that would make us all slaves of our passions if the Son of God had not delivered us from their servitude through the delight of His grace. For in the final analysis, what I have just been saying in behalf of joy of the mind against sensuous joy is true only among Christians, and it would be absolutely false coming from the mouth of Seneca, or even Epicurus, or any of the seemingly most reasonable philosophers, because the yoke of Jesus Christ is sweet only to those who belong to Jesus Christ, and His burden seems light to us only when His grace helps us carry it.

BOOK FIVE
Chapter Four

That the pleasures and impulses of the passions involve us in error with regard to good, and that they must be resisted continuously. The way to combat licentiousness.

None of the things we have just explained concerning the passions in general are free; they are in us independently of us, and only the consent of our will depends wholly on us. The perception of some good is naturally followed by an impulse of love, a sensation of love, a disturbance of the brain and movement of the spirits, a new emotion of the soul that increases the first impulse of love, a new sensation of love that increases the first sensation of love, and finally by a sensation of delight that rewards the soul because its body is in its proper state. All these things take place in the soul and in the body naturally and mechanically, i.e., without the soul having any part in them, while only our consent is truly ours. This consent must be regulated and kept free in spite of all the efforts of the passions. Only to God should it subjugate its freedom; it should surrender only to the voice of the Author of nature, to inner certainty, to the secret reproaches of reason. Consent should be given only when we clearly see that ill use would be made of our freedom were we not to will consent—this is the fundamental rule to be observed in order to avoid error and sin.

Only God makes us see clearly that we should yield to what He wishes of us; therefore, we should be slaves of Him alone. There is no certainty in the charms and endearments, in the threats and terror that the passions cause in us; they are only confused and obscure sensations to which we should not yield. We must wait until a purer light illumines us, until this time of passion passes away and God speaks. We must withdraw into ourselves and there search out Him who never leaves us and who enlightens us always. He speaks quietly but in a distinct voice; He does not enlighten a great deal but His light is pure. No, His voice is as strong as it is distinct, and His light is as intense and as brilliant as it is pure. But our passions continually draw us away from ourselves, and by their clatter and shadows they prevent us from being instructed by His voice and illumined by His light. He speaks even to those who do not beseech Him, and those whom the passions have led farthest astray nonetheless hear some of His words—but powerful, threatening and terrible words, more piercing than a double-edged sword,[a] which reach the inner recesses of the soul and which discern the thoughts and impulses of the heart; for everything is visible to His eyes, and He does not fail to see the behavior of sinners without severely reproaching their conscience for it. We must therefore enter into ourselves and draw nearer to Him. We must beseech Him, listen to Him, and obey Him; for if we listen to Him, we shall never be deceived, and if we obey Him always, we shall never be subjugated to the inconstancy of the passions and the miseries due to sin.

We must not imagine as do certain daring minds whom the dominance of the passions has reduced to the condition of beasts and who, having despised the Law of God for so long, seem basically to know nothing but their own vile passions—we must not, I say, imagine as do these men of flesh and blood that to follow God and to obey the voice of the Author of nature is to follow the impulses of these passions and to obey the secret desire of our heart. This is the ultimate blindness; according to Saint Paul[b] it is the temporal punishment for impiety and idolatry, i.e., it is the punishment for the greatest of crimes. Indeed, so great is this punishment that, instead of appeasing the wrath of God, it continuously exacerbates and increases it until that terrible day when this justified wrath will strike out against these sinners.

Nonetheless, their arguments do not lack a certain plausibility: they seem to conform to common sense, they are agreeable to the passions, and all of Zeno's philosophy undoubtedly would not be able to overthrow them. We must love the good, they say; pleasure is the sign that nature has attached to the good; by means of this sign, which cannot be deceptive since it comes from God, we distinguish it from evil. We must flee from evil, they continue; pain is the sign that nature has attached to evil; and by means of this mark, which cannot be deceptive since it comes from God, we distinguish it from good. We enjoy pleasure when we give ourselves over to passion; we feel pain when we resist it. Therefore, the Author of nature wills that we abandon ourselves to our passions and that we never resist them, since the pleasure and the pain He makes us feel in these instances are certain proofs of His volitions concerning us. Therefore, to follow God is to follow the desires of the heart, and to obey His voice is to yield to the instinct of nature that leads us to satisfy our senses and passions. This is the way that they reason and become entrenched in their vile views. This is the way that they try to hide the secret reproaches of their reason; and as punishment for their crimes, God allows them to be dazzled by these false lights. Deceiving lights that blind them instead of enlightening them, but that blind them in such a way that they do not perceive it and do not even wish to be cured of their blindness! God lets them follow their evil ways, He abandons them to the desires of their heart, to their shameful passions, to the unworthy actions of men, as Sacred Scripture says, so that having been fattened on their debauches, they may be sacrificial victims of His wrath for all eternity.

[a] Heb. 4 [:12].

[b] Rom. 1 [:18–32].

But the knot of the difficulty they propose must be undone. Having been unable to undo the knot, Zeno's group immediately cut it by denying that pleasure was a good and pain an evil. But this evasion is very cavalier for philosophers, and I do not think that it would change the opinion of those who know through experience that intense pain is a great evil. Thus, Zeno and all pagan philosophy is unable to resolve the difficulty proposed by the Epicureans, and recourse must be had to another more solid and more enlightened philosophy.

It is true that pleasure is good and pain evil, and that the pleasure and pain that the Author of nature has attached to the use of certain things makes us judge whether they are good or evil. It is true that we must make use of good things and avoid the bad and must almost always follow the impulses of the passions. But though all this is true, it concerns only the body. We must almost always give free reign to our passions and desires in order to preserve our body and to prolong our animal existence. The senses and the passions were given to us only for the good of the body. Sensible pleasure is the mark that nature has attached to the use of certain things in order that without having to bother with a rational examination we might use them for the preservation of the body—but not in order that we might love them. For we must love only what we clearly recognize through reason to be our good, the true cause of our happiness.

We are rational, and God who is our good does not wish to give us a blind love, an instinctive love, a forced love, as it were, but a love by choice, an enlightened love, a love that subjects our mind and heart to Him. He leads us to love Him by revealing through the light accompanying the delight of His grace that He is our good; but He leads us to the good of the body only through instinct and a confused sensation of pleasure, because the good of the body does not deserve the attention of our mind or the exercise of our reason.

Furthermore, we are not our body; it is a thing belonging to us, but without which, speaking in an absolute sense, we are able to subsist. The good of our body is therefore not our good. Bodies can be the good only of bodies. We may use them for our own body, but we must not attach ourselves to them. Our soul also has its own good, to wit, that good which alone is above it, which alone preserves it, and which alone produces sensations of pleasure and pain in it. For in the end all the objects of our senses are by themselves incapable of being sensed, and only God can inform us of their presence through the sensations He gives us of them. And this is what the pagan philosophers failed to understand.

We can and must love what is capable of making us sense pleasure, granted. But it is for this reason that.we must love only God, because only God can act in our soul and because sensible objects can do no more than move our sense organs. But what difference does it make, you will ask, where these pleasant sensations come from? I only want to enjoy them. Ingrate, take a look at the hand heaping goods upon you! You exact unjust rewards from a just God; you would have Him reward you for the crimes you commit against Him, and at the same time you commit them. You use His immutable will, which is the order and law of nature, to extort favors from Him that you do not deserve, for with criminal skill you produce motion in your body that forces Him, as a result of the laws He has established concerning the union of the body and soul, to make you enjoy all kinds of pleasures. But death will corrupt this body, and God, whom you have made serve your unjust desires, will mock you when His turn comes and then will make you serve His own just wrath.

I grant that it is a vexing thing that the possession of bodily goods should be accompanied by pleasure and that the possession of the soul's good should often be joined to pain and misery. You might think that this is a poor arrangement, reasoning that since pleasure is the mark of good as pain is the mark of evil, we should receive infinitely more delight in our love of God than in using sensible things, seeing that God is the true, or rather the only, good of the mind. This will certainly be the case some day, and there is some likelihood that it was so before Original Sin—at least we are sure that before Original Sin the performance of duty involved no experience of pain.

But God has withdrawn from us since the Fall of the first man. He is no longer our good by nature but only through grace, for we no longer naturally experience delight in His love; far from leading us to love Him, He sends us away from Him. If we follow Him, He rebuffs us; if we run after Him, He strikes us; if we are obstinate in our pursuit, He continues to maltreat us and makes us suffer severe sensible pain. But when, having been left to tread the hard and painful way of virtue without having been supported by the enjoyment of good or fortified by any nourishment, we do feast on sensible goods, He attaches us to them by the enjoyment of pleasure, seemingly wishing to reward us for turning our back on Him in order to run after false goods. Finally, it seems that since the Fall, God no longer wills that we love Him, think about Him, or regard Him as our only good. Only through the delight provided by the grace of our mediator Jesus Christ do we sensibly perceive that God is our good. For given that pleasure is the sensible mark of good, we perceive that God is our only good because through the grace of Jesus Christ our love of God involves pleasure.

Thus, given that the soul does not recognize its good either through clear perception or through sensation without the grace of Jesus Christ, it takes the good of the body for its own good, loves it, and attaches itself to it still more closely with its will than it had ever been attached by nature's initial arrangement. For, since the good of the body is the only one that can now be sensed, it necessarily acts on man with greater force, the brain is more vividly struck by it, and as a result is affected more in sensing and imagining it. The animal spirits are more greatly agitated by it, and, as a result, the will loves it more fervently and with greater pleasure.

Before the Fall, the soul could erase the brain's images of bodily good that were too lively and make the sensible pleasure accompanying these images disappear. With the body under the mind's dominance, the soul could instantaneously arrest the disturbance in the brain's fibers and the agitation of the spirits merely by considering its duty. But since the Fall this is no longer in its power. These traces of the imagination and movements of the spirits no longer depend on it and, as a necessary consequence, the pleasure attached to these traces and movements by the order of nature becomes the sole master of the heart. Man cannot long resist this pleasure with his own resources; only grace can overcome it completely. Reason alone cannot, because, in short, only God as Author of grace can, as it were, overcome Himself as Author of nature, or, rather, can mollify Himself as avenger of Adam's disobedience.

The Stoics, who had only a confused understanding of the disorders caused by Original Sin, could not respond to the Epicureans. For their ultimate happiness was only an idea, since there is no felicity without pleasure and they did not enjoy pleasure in genuinely virtuous actions. They did feel some joy in following the rules of their imaginary virtue because joy is a natural consequence of our soul's knowledge that it is in the best state it can be in. This joy of the mind was able to keep up their courage for a while, but it was not strong enough to resist pain or overcome pleasure. Secret pride and not joy was the source of their bearing; when they were no longer in public view, they lost their wisdom and strength as quickly as kings in theater plays lose their grandeur.

Such is not the case with Christians who closely observe the rules of the gospel; their joy is secure because they know with certainty that they are in the best state they can possibly be in. Their joy is great because the good they enjoy through faith and hope is infinite. For the hope of a great good is always accompanied by great joy, and this joy is as vivid as the hope is strong because strong hope, causing the good to be imagined as present, necessarily produces joy and even the sensible pleasure always accompanying the presence of good. Their joy is not an apprehensive joy because it is based on the promises of God, confirmed by the blood of His Son, and supported by inner peace and the unutterable delight of charity that the Holy Spirit spreads in their heart. Nothing can separate them from their true good as long as they enjoy it and take pleasure in it through the delight of grace. The pleasures of bodily goods are neither as great nor as genuine and pure as those that they feel in loving God. They love contempt and pain, they thrive on disgraces, and the pleasure they find in God when they scorn all others to unite themselves to Him is so fierce that they are transported and made to speak an entirely new language; and they glory, even as did the Apostles, in their miseries and in the abuse they have suffered. But as for the Apostles, according to Scripture,[a] they left the Sanhedrin filled with the joy that they had been judged worthy to suffer disgrace for the name of Jesus. Such is the mental attitude of true Christians when they have received the ultimate insults in defense of the truth.

Given that Jesus Christ came to reestablish the order upset by sin, and given that order demands that the greatest goods be accompanied by the most genuine pleasures, clearly things must occur in the way we have just indicated. But besides reason we also have experience, for as soon as someone merely resolves to scorn everything in favor of God, he is ordinarily moved by a pleasure or inner joy that makes him sense that God is his good as clearly as he knows it.

True Christians assure us every day that the joy they have in loving and serving God alone cannot be expressed, and surely they should be believed about what takes place within themselves. The impious, on the other hand, are constantly afflicted with mortal anxieties, and those the world shares with God also share the joy of the just and the anxieties of the impious; they complain of their miseries, and they too should be believed that their laments are not without foundation. God afflicts men in the bottom of their heart when they love something other than Him, and this affliction is the cause of true misery. He infuses a great deal of joy into their minds when they attach themselves only to Him, and it is this joy that causes genuine happiness. Great riches and the bestowal of honors are external to us; they cannot heal us of God's affliction. Poverty and scorn are also external to us, and they cannot afflict us when God defends us against them.

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[a] Acts 5:41.

From what we have just said, it is clear (1) that the object of our passions is not our good; (2) that we must follow their impulses only for the preservation of our life; (3) that sensible pleasure stands to our good as our sensations stand to the truth, and that just as our senses deceive us with regard to the truth, our passions deceive us with regard to the good; (4) that we should yield to the delight of grace because it leads us with certainty to the love of true good, that it is not followed by the secret reproaches of reason as are instinct and the confused pleasure of the passions, and that it is always accompanied by a secret joy in proportion to the state we are in; (5) that finally, since only God can act on the mind of man, man can find no happiness outside of God, unless it is supposed that God rewards disobedience or commands us to love more what in fact deserves to be loved least.

BOOK FIVE
Chapter Five

That the mind's perfection consists in its union with God through its knowledge of truth and love of virtue, whereas its imperfection springs only from its dependence on the body because of the disorder of its senses and passions.

The least reflection suffices to see that the good of the mind is necessarily something spiritual. Bodies are inferior to the mind, they cannot act on it through their own powers, they cannot even be immediately related to it, and finally they are not intelligible by themselves. They therefore cannot be its good. Spiritual things, on the other hand, are by their nature intelligible, they can be immediately related to the mind; they therefore can be its good, given that they are superior to the mind. For in order for something to be the mind's good it is not enough for it to be spiritual like the mind, it must also be superior to it. It must be able to act on the mind, enlighten it, reward it; otherwise, it can make the mind neither happier nor more perfect, and as a result, it cannot be its good. Of all intelligible or spiritual things, only God is in this way superior to the mind; it therefore follows that only God is, or can be, our true good. Therefore, we can become happier and more perfect only through the possession of God.

Everyone is convinced that knowledge of truth and love of virtue make the mind more perfect, that mental blindness and disorders of the heart make it more imperfect. Knowledge of truth and love of virtue, therefore, cannot be anything other than the mind's union with God and a kind of possession of God, whereas mental blindness and disorders of the heart cannot be anything other than the mind's separation from God and its union with something below it, i.e., with the body, since only this union can make it unhappy and imperfect. Thus, to know God is to know the truth or to know things according to the truth, and to love God is to love virtue or to love things to the extent to which they are worthy of love, or according to the rules of virtue.

The mind is, as it were, between God and body, between good and evil, between that which enlightens it and that which blinds it, that which sets it in order and that which disrupts it, between that which can make it perfect and happy and that which can make it unhappy and imperfect. When it discovers some truth or sees things as they are in themselves, it sees things in God's ideas, i.e., with a clear and distinct perception of what represents them. For, as I have already said, man's mind does not contain in itself the perfections or ideas of all the beings that it can perceive; it is not universal being. Thus, it does not see in itself things that are different from itself. It is not instructed or enlightened through its own resources, for its own perfection and enlightenment do not depend on it—it needs the immense light of eternal truth to be enlightened. Thus, when the mind knows the truth, it is united to God, and, to a certain extent, knows and possesses God.

But not only might we say that the mind that knows the truth to a certain extent also knows God who contains the truth, we might even say that to a certain extent it knows things as God knows them. Indeed, this mind knows their true relations, which God also knows. This mind knows them in the perception of God's perfections that represent them, and God, too, knows them in this way. For God neither senses nor imagines, but sees in Himself, in the intelligible world He contains, the material and sensible world He has created. The same is true of a mind that knows the truth; it neither senses nor imagines—sensations and phantasms represent only false relations to the mind, and whoever discovers the truth perceives it only in the intelligible world to which the mind is joined and in which God Himself sees it, for the material and sensible world is not intelligible by itself. Everything the mind clearly sees, then, it sees in the light of God even as does God Himself, although it sees them only in a way that is very imperfect and therefore different from the way in which God sees them. Thus, when the mind perceives the truth, not only is it joined to God, not only does it possess God and to a certain extent see God, but it also in a sense perceives the truth as God perceives it.

Likewise, when we love according to the rules of virtue, we love God. For when we love according to these rules, the impression of love that God continuously produces in our heart in order to incline us toward Him is neither diverted by free will nor converted into self-love. All the mind then does is to freely follow this impression that God gives it. Now, since God never gives it an impression that does not lead toward Him, since He acts only for Himself, to love according to the rules of virtue is clearly to love God.

But not only is this to love God, it is also to love as God loves. God loves only Himself—He loves His creations only because they are related to His perfections, and He loves them to the extent to which they have this relation—in the final analysis God loves Himself and the things He has created with the same love. To love according to the rules of virtue is to love God alone and to love Him in all things; it is to love things to the extent to which they participate in the goodness and the perfections of God, since this is to love them to the extent to which they are worthy of love; finally, it is to love with the impression of the same love by which God loves Himself, for it is God's self-love and everything related to it that animates us when we love as we should love. We love, therefore, as God loves.

It is clear, therefore, that knowledge of truth and love of virtue together constitute our entire perfection, since they are the ordinary consequences of our union with God and give us possession of Him to the extent to which we are capable of it in this life. Mental blindness and derangement of heart, on the other hand, together constitute our entire imperfection. They too are the consequences of a union of our mind with our body, as I have proved in several places while showing that we never know truth or love true good when we follow the impressions of our senses, imagination, or passions.

These things are clear. Yet men, all of whom fervently desire the perfection of their being, hardly bother about strengthening the union they have with God and work constantly to strengthen and extend the one they have with sensible things. The cause of such an extreme disorder cannot be explained at too great a length.

The possession of good must naturally produce two effects in its possessor. It should make him more perfect and at the same time happier; but this does not always happen. I grant the mind cannot actually possess some good and at the same time not be more perfect; but it can actually possess some good without being happier. Those who best know the truth and most love the goods worthiest of love are always more perfect than those in a state of blindness and disorder, but they are not always happier. The same is true of evil—it should make us imperfect and unhappy; but although it always makes men more imperfect, it does not always make them unhappier, or it does not make them unhappy to the extent to which it makes them imperfect. Virtue is often hard and distasteful and vice easy and pleasant, and it is mainly through faith and hope that the righteous are truly happy while the wicked revel in their pleasures. This should not be the case, but it is. Sin has caused this disorder, as I have just explained in the preceding chapter, and it is this disorder that is the main cause not only of all our heart's derangements but also of our mind's blindness and ignorance.

This disorder convinces our imagination that the body can be the mind's good because, as I have already said several times, pleasure is the sensible mark or sign of good. Now of all the pleasures that we enjoy here below, the most sensible are those that we imagine we receive through the body. Without much thought we therefore judge that the body can be, and in fact is, our good. For it is very difficult to fight natural instinct and to resist the persuasion of sensation—indeed, we do not even think about them. We do not think about the disorder of sin. We do not consider that bodies can act on the mind only as occasional causes, that the mind cannot immediately or by itself possess anything corporeal and cannot unite itself to an object except through its knowledge and love, that only God is above it and can reward or punish it though sensations of pleasure or pain, or can enlighten or move it—in a word, only He can act on it. These truths, though very clear to attentive minds, are not as convincing as the deceptive experience of sense impressions.

When we consider something as part of ourselves or ourselves as part of something else, we judge that our good consists in being joined to it, we have a love for it, and our love increases as the thing in question seems to be a greater part of the whole that we make up together with it. Now there are two kinds of proofs that convince us that something is part of ourselves: the instinct of sensation and the evidence of reason.

Through the instinct of sensation, I am persuaded that my soul is joined to my body, or that my body is part of my being; I have no evidence for this. I do not know it through the light of reason, but only through the pain or pleasure I sense when objects strike me. Our hand is pricked, and we feel pain in it; therefore, our hand is part of ourselves. Our clothing gets torn, and we do not feel anything; therefore, our clothing is not part of ourselves. Our hair can be cut but not torn out without pain. This bothers philosophers; they do not know what to say, but their dilemma proves that even the wisest of men judge by means of the instinct of sensation rather than by the light of reason as to whether something is part of themselves. For were they to judge the matter by the light of reason and its evidence, they would soon realize that the mind and the body are two entirely contrary kinds of beings, that the mind cannot by itself join itself to the body, and that only through the union it has with God is the soul hurt when the body is struck—as I have explained elsewhere. Only through the instinct of sensation, therefore, do we regard our body and all sensible things to which we are joined as part of ourselves, i.e., as parts of what thinks and senses in us, for what is not cannot be known with the evidence of reason, which never reveals anything but the truth.

But with intelligible things just the opposite is the case, for by the light of reason we recognize the relation that we have with them. Through the mind's clear vision we discover that we are united to God in a closer and more essential way than we are to our bodies, that without God we are nothing, that without Him we can know nothing, do nothing, will nothing, and sense nothing, that He is our all, or that with Him we make a whole—if it may be so expressed—of which we are an infinitely small part. The light of reason reveals to us a thousand reasons for loving only God and scorning bodies as unworthy of our love. Not through the instinct of sensation are we persuaded that God is our all—unless it is through the grace of Jesus Christ, which in certain people causes this sensation in order to help them overcome the opposite sensation by which they are joined to the body. For God as the Author of nature leads minds to His love through enlightened knowledge and not by instinctive knowledge. From what we can tell, only since the Fall has God as the Author of grace added instinct and prevenient delight to illumination because our light is now greatly diminished and is incapable of leading us to God, and because the strain of pleasure or of the contrary instinct continuously weakens it and makes it ineffective.

Thus, we discover through the light of the mind that we are united to God and to the intelligible world He contains, and through sensation we come to believe that we are joined to our body, and through our body to the sensible world that God has created. But as our sensations are more lively and more frequent, affect us more, and are even stronger than our illuminations, we should not be surprised that our sensations excite us and awaken our love for all sensible things, while our illuminations dissipate and vanish without arousing any desire in us for the truth.

It is true that many people believe that God is their true good, love Him as their all, and fervently desire to increase and strengthen their union with Him. But very few know with certainty that to know the truth is to be joined to God as far as nature allows, that to contemplate the true idea of things is in a way to possess

God Himself, and that the abstract perception of certain universal and immutable truths, which determine all particular truths, is achieved by the mind that attaches itself to God and rejects the body. Metaphysics, pure mathematics, and all the universal sciences that determine and contain the particular sciences as the universal being contains all particular beings seem chimerical to almost everyone—to the pious as well as to those who have no love for God. Consequently, I hardly dare claim that in applying itself to these sciences the mind applies itself to God in the purest and most perfect way of which it is capable, and that it is in perceiving the intelligible world that these sciences have as their object that God Himself knows and produces the sensible world that bodies depend on for their life as minds depend on the intelligible.

Those who follow only their sense impressions and the impulse of their passions are incapable of experiencing the truth because it does not please them. Even the good people who continuously oppose their passions when they present false goods to them do not always resist their passions when they conceal the truth from them or when they make the truth undesirable to them, because one can be good without being very enlightened. In order to be pleasing to God, it is not necessary to know exactly that our senses, imagination, and passions always represent things to us other than as they are, for indeed it does not appear that Jesus Christ and His apostles ever intended to advise us of the many errors that Descartes has discovered in this area.

There is quite a difference between faith and understanding, between the gospel and philosophy. Even the densest of men are capable of faith, but very few of them are capable of pure knowledge of certain truths. Even to the simplest of people, faith represents God as the Creator of heaven and earth, and this is enough to lead them to love and serve Him. Reason does not consider Him only with regard to His works (God was as He is before He created); it tries to envisage Him in Himself, or through that great and vast idea of infinitely perfect being that He contains. The Son of God, who is the wisdom of God or eternal truth, was made man and became sensible to make Himself known to crude and carnal men. He wished to instruct them by means of what was blinding them; He wished to lead them to His love, to free them from sensible goods by means of the same things that were enslaving them. Dealing with fools, He used a kind of foolishness to make them wise. Thus, the good people and those who have the most faith are not always the most intelligent. They can know God through faith and love Him with the help of grace without knowing that He is their all in the way in which philosophers can understand this, and without the thought dawning on them that abstract knowledge of truth is a kind of union with Him. We should not be surprised, then, to find so few people working to strengthen their natural union with God through knowledge of truth, since to do this an unending battle must be waged against the impressions of the senses and passions in a way quite different from that known to the virtuous; for the most pious are not always convinced that the senses and the passions deceive in the ways we have explained in the preceding books.

Only those sensations or thoughts in which the body has some part are the immediate cause of the passions, because only the disturbance of the brain's fibers excites any specific disturbance in the animal spirits. Thus sensations are the only sensible proofs of our dependence on certain things for which they excite our love. Now we do not sensibly perceive our natural union with God when we know the truth—we do not even think about Him, for He is and works in us in such a recondite and insensible way that we are unaware of Him. Our natural union with God, therefore, does not excite our love for Him. But such is not the case with the union we have with sensible things. All our sensations reaffirm this union, for bodies are visible when they act in us; their action is in no way hidden. Our own body is even more present to us than our mind, and we consider it the best part of ourselves. Hence, the union we have with our body, and through it with all sensible objects, excites a fervent love in us that increases this union and makes us depend on things infinitely below us.

BOOK FIVE

Chapter Six

The most general errors of the passions; some particular examples.

Part of the task of morals is to discover all the particular errors in which our passions involve us concerning the good; it is up to it to combat inordinate love, to restore the integrity of the heart, and to regulate morality. But our main goal here is to control the mind and discover the causes of our errors with regard to truth; thus, we shall not pursue any further the things we have just mentioned, which are concerned only with the love of true good. We shall move on to the mind by way of the heart only because the heart is its master. We are looking for the truth in itself and not in relation to us, and we shall consider the relation it has to us only because this relation causes self-love to disguise the truth and hide it from us; for we judge all things according to our passions, and, as a result, we are deceived in all things, since judgments of passion are never in agreement with judgments of truth.

This is what we learn from the fine words of the venerable Saint Bernard:[a] "Love and hate," he says, "know not how to judge according to the truth. But would you hear a judgment according to truth? 'I judge only as I hear,' not as I hate or love or fear. Here is a judgment of hatred: 'we have a law, and according to our law He must die.' Here is a judgment of fear: 'if we let Him carry on in this way, the Romans will come and destroy our city and nation.' Finally, here is a judgment of love (David speaking of his parricidal son): 'spare my son Absalom.'" Our love, hatred, and fear make us judge only falsely; only the pure light of the truth enlightens our mind, and only the distinct voice of our common master makes us judge solidly provided that we judge only what he says to us and as he tells us—"sicut audio, sic judico." But now let us see how our passions seduce us, so that we may more easily resist them.

[a] "Amor sicut nec odium, veritatis judicium nescit. Vis judicium veritatis audire? 'Sicut audio, sic judico': non sicut odi, non sicut amo, non sicut timeo." John 5:30. "Est judicium odii, ut illud: 'Nos legem habemus & secundum legem nostram debet mori." John 19:7. "Est & timoris, ut illud: 'Si dimittimus eum sic, venient Romani, & tollent nostrum locum & gentem." John 11:48. "Judicium vero amoris, ut David de filio parricida. 'Parcite,' inquit, 'puero Absalom." Secundo Reg. 18:5. St. Bern. *De grad. humilitatis*. [pt. 1. ch. 4].

The passions are so closely related to the senses that, after what we said in the first book, it will not be difficult here to explain how they involve us in error. The general causes of the errors of our passions are exactly like those causing the errors of our senses.

As we have already shown in the first book, the most general cause of the errors of our senses is that we attribute sensations to external objects or to our body that in fact belong to our soul, that, for example, we place colors on the surface of bodies, scatter light, sounds, and odors through the air, and locate pain and tickling sensations in the parts of our body that undergo changes as a result of the motion of bodies they encounter.

Roughly the same thing must be said of our passions. We rashly attribute all the dispositions of our heart, our goodness, our affability, our malice, our bitterness, and all the other qualities of our mind to the objects causing, or seeming to cause, them. When we think about the object generating some passion in us, it appears to us as somehow containing in itself what it arouses in us—just as sensible objects seem to us to contain the sensations their presence excites in us. When we love someone, we are naturally led to believe that he loves us, and we find it somewhat difficult to imagine that he intends to harm us or oppose our wishes. But if hatred follows our love, we cannot believe he wishes good for us; we interpret all his actions in the worst way, and we are always apprehensive and suspicious, although his only thought might be to help us. Finally, we incorrectly attribute to the person exciting some passion in us all the dispositions of our heart—just as we rashly attribute the qualities of our mind to the objects of our senses.

Moreover, as we believe that all men receive the same sensations as we do from the same objects, so we believe that all men are moved by the same passions and for the same reasons as we are, given that we believe them to be moved by them at all. We think they love what we love and desire what we desire, and from this our jealousies and secret aversions are generated—if the good we seek cannot be entirely possessed by many people, for just the opposite happens when several people can possess a good without dividing it, such as with the sovereign good, science, virtue, and so on. We also think they hate, avoid, and fear the same things we do, and from this are generated the involvements and plots, secret or public depending on the state and nature of the object they hate, by means of which we hope to free ourselves from our miseries.

Thus, we attribute to the objects of our passions the emotions they produce in us, and we believe all other men, and sometimes even beasts, to be moved by them as we are. But besides this, we even more rashly judge that the cause of our passions, which is often only something imaginary, is really in some object. When we are moved by a passionate love for someone, we judge that everything about him deserves to be loved. His grimaces are pleasant, his ugliness is not offensive, his clumsy and unpolished actions are quite correct, or at least natural. If he never speaks, it is because he is a sage; if he is never silent, it is because he is very intelligent; if he talks about everything, it is because he is a man of great experience; if he continually interrupts others, it is because of his fiery and vivacious nature; if he is always ready to preen himself, it is because he deserves it. This is how passion conceals and disguises our friends' shortcomings while emphasizing their least advantages.

But if this friendship, which like all passions is based only on the agitation of the blood and animal spirits, begins to cool for lack of bodily heat or spirits to sustain it, or if some distraction or false relation alters the brain's disposition, the hatred replacing love will not fail to make us imagine all the defects to which we direct our aversion in the object of our passion. We shall then find in this same person qualities just the opposite of those we had admired in him beforehand. We shall be ashamed to have loved him; and the now dominant passion will not fail to justify itself and ridicule the one whose place it has taken.

The influence and injustice of the passions are not limited to the things we have just spoken about—they extend infinitely further. Our passions conceal not only their main object from us but also everything to which they have any relation; not only do they make us love all the qualities of our friends but also most of the qualities of our friends' friends. They hold even greater sway among those whose imagination is stronger and of greater scope, for their passions' hold on their mind is so vast and of such great scope that their limits cannot be determined.

The things I have just discussed are such widespread and fertile sources of error, prejudice, and injustice, that it is impossible to take note of all their consequences. Most of the truths, or rather the errors restricted to certain places, times, communities, and families, are its consequences. What is true in Spain is false in France; what is true in Paris is false in Rome; what is certain among the Dominicans is uncertain among the Franciscans; what is indubitable among the Franciscans seems to be in error among the Dominicans. The Dominicans feel themselves obliged to follow Saint Thomas, and why? Often it is because the holy doctor was a member of their order. The Franciscans, on the other hand, stand by the opinions of Scotus, because Scotus was a Franciscan.

Such is the case with truths and errors limited to certain times. Two thousand years ago the earth turned; then it remained immobile until recently, when it has again begun to turn. They used to burn Aristotle; a provincial council approved by the pope wisely prohibited the teaching of his physics. He was then immediately held in esteem and now again begins to fall into disrepute. There are views now being taught in the schools that had been rejected as heresies and whose proponents were excommunicated as heretics by certain bishops. Because the passions cause these factions among people, the truths or errors produced by the factions are as inconstant as the ultimate cause that excites them. For example, men are indifferent with regard to the earth's mobility and the form of *corporeity*;[a] but they are not indifferent with regard to these views when they are held by people whom they hate. Thus, hatred, sustained by some confused

[a] Spelmann, *Council of England*, 1287.

feeling of piety, breeds the kind of indiscreet zeal that grows warm, begins to burn, and finally produces those events whose exaggeration is not apparent to everyone until long after they have taken place.

We find it hard to imagine that the passions extend so far, but that is because we fail to realize that our passions extend to everything that can possibly satisfy us. Perhaps Haman did not wish to harm the entire Jewish people, but Mardochai, who was a Jew, failed to worship him; so that his vengeance might be spectacular, the whole nation had to be destroyed.

A legal contest takes place between two men to decide who owns a piece of land; they ought to produce only their titles and say only what is related to their case or what might improve it. Yet they never fail to slander one another, contradict each other's statements, contest trivial points, and complicate their case with an infinity of pointless details that obscure the main issue. In short, the influence of each of the passions is as great as the mental scope of those moved by them—i.e., if we think that something is in any way related to the object of our passions, the passions move us with regard to that object. Here is a description of the process.

The traces of objects in the brain are so closely connected that the flow of animal spirits cannot call up any of them with any urgency without others being raised at the same time. The main idea of the thing we are thinking about, therefore, is necessarily accompanied by a great number of ancillary ideas that increase as the impression of the animal spirits becomes more urgent. Now this impression of the spirits cannot fail to be urgent in the case of the passions because the passions always force a great deal of spirits with great urgency into the brain so that traces of ideas representing their object might be preserved. Thus, the impulse of love or hatred extends not only to the main object of passion but also to all objects seen as having some relation to this object, because the soul's impulse in passion follows the mind's perception, just as the motion of the animal spirits in the brain follows the traces in the brain—both those that call up the main idea of the object of passion as well as those related to this idea.

We should not be surprised, then, if men's hatred or love goes to such lengths, or if their actions are very strange and unexpected. There is a specific reason for each of these things, though we might not know it; their ancillary ideas are not always like ours and must therefore remain concealed from us. Thus, there is always some specific reason why they carry on in a way which seems outrageous to us.

BOOK FIVE

Chapter Seven

Of the individual passions, beginning with wonder and its ill effects.

Everything I have said until now about the passions has been rather general, but there is no difficulty in drawing specific conclusions from it. We need only reflect both on what happens in ourselves and on the actions of others in order to discover more of these truths at a single glance than could be explained here at great length. Yet so few people make any effort to enter into themselves or even think about doing so that to arouse them and catch their attention, we must now descend somewhat into particulars.

When we strike or touch ourselves, we seem almost insensible; but when we are merely touched by others, we receive sensations lively enough to arouse our attention. In short, we do not tickle ourselves or even think about doing so, and were we to, we would be unlikely to succeed. It is for roughly the same reason that it never occurs to the mind to touch or probe itself, that it dislikes doing so and is generally incapable of recognizing or sensibly perceiving all the parts of its soul, unless affected and made sensible of them by others. Thus, in order to make it easier for certain minds to know themselves, we must discuss specific passions and thereby inform them of each of their component parts by means of what affects them.

Those who read what follows should nonetheless be warned that they will not always feel that I am talking about them, and that they will not always see themselves as subject to the passions and errors I shall disucss, since not all the particular passions are the same in all men.

All men have the same natural inclinations that are unrelated to the body. And when their body is perfectly disposed, even those related to the body are held in common. But different bodily constitutions and frequent changes in the body cause an infinite variety among our particular passions. Yet if we add to the variability of the body's constitution the unsettled state generated by objects, which make quite different impressions on people from different occupations and ways of life, it is clear that one may feel oneself greatly affected by certain things in a part of one's soul and remain altogether insensible to many others. Thus, it would be a mistake always to judge what others must be feeling on the basis of what we feel.

I have no fear of being mistaken when I claim that all men wish to be happy, for I am utterly certain that Chinese and Tartars, angels and even devils, and in short all minds, have an inclination toward happiness. I even know that God will never produce a mind lacking this desire. It is not experience that teaches me this—I have never even seen a Tartar or a Chinese—nor is it the inward testimony of my consciousness, which only teaches me that I wish to be happy; only God can give me the inner conviction that all other men as well as the angels and devils wish to be happy. Only He can assure me that He will never give being to any mind that is indifferent to happiness, for who else but He could positively assure me about what He does and even about what He thinks? And, as He can never deceive me, I can have no doubts about what He teaches me. I am therefore certain that all men wish to be happy because this inclination is natural and does not depend on the body.

Such is not the case with the individual passions. If I am enthusiastic about music, dancing, or hunting, or if I like sweets and good food, I can conclude nothing from this about other men's passions. Undoubtedly pleasure is agreeable to everyone, but not everyone finds pleasure in the same things. Love of pleasure is a natural inclination; this love does not depend on the body; therefore, it is common to all men. But the love of music, dancing, or hunting is not universal, because the body's disposition on which it depends differs in all men, and so all the passions depending on it are not always the same.

The general passions such as desire, joy, and sadness are midway between the natural inclinations and the particular passions. Like the inclinations, they are general, but they are not as strong, because the cause that produces and sustains them is not equally active. There is an infinite variation in the degree to which the animal spirits are agitated, in their quantity and consistency, and in their relation to the brain's fibers.

Thus, it often happens that others are not in the least affected by our talk about particular passions; but when they are affected by it, they are greatly moved. Just the opposite is the case with the general passions and inclinations: talk about them always has an effect, though so weak and languid as to be hardly felt. I mention these things in order that the truth of what I say may be judged, not on the mere basis of an opinion about what I have already said and shall say, but through a consideration of the nature of the passions I am discussing.

Should we decide to treat all the particular passions or to distinguish them according to the objects that excite them, we clearly would never finish and we would always be saying the same thing. We would never finish because the objects of our passions are infinite, and we would always be saying the same thing because we would always be dealing with the same topic. The particular passions we have for poetry, history, mathematics, for hunting and for dancing are but the same passion, for the passions of desire and joy at what pleases us, for example, are not different, although the specific objects that please us might be different.

The passions should not be listed, therefore, according to their objects, which are infinite, but only according to the principal relations they can have with us. In this way it will be seen, as we shall explain below, that love and hatred are the two parent passions and that the only general passions they produce are desire, joy, and sadness, that the particular passions are composed only of these three primitive passions, and that they are compounded to the extent to which the principal idea of good or evil exciting them is accompanied by a greater number of ancillary ideas, or that the good and evil in question are more specified in relation to us.

If you will remember both what was said about the connection of ideas[a] and that during great passion the animal spirits, which are then very agitated, awaken in the brain all the traces having any relation to the object exciting us, you will see that there are passions differing in an infinity of ways that have no specific name, and that they can be explained in no other way than by saying that they are inexplicable.

If the primitive passions the combination of which produces all the others could not vary in degree, there would be no difficulty in determining how many passions there are. But the number of passions compounded out of other passions must be infinite because with a single passion having an infinite number of degrees, it can combine with others in an infinite number of ways. As a result of this, it is possible that there have never been two men moved by the same passion, if by the same passion is meant the entire combination of equal impulses and similar sensations aroused in us by the presence of some object.

But as variation in degree involves no qualitative change, we can conclude that the number of passions is finite, because the circumstances accompanying good and evil are finite. But let us now explain our passions in detail.

When we see something for the first time, or when after seeing it several times in a given setting we see it in a different setting, we are surprised by it and wonder at it. Thus, a new idea or a new connection of old ideas causes an imperfect passion in us that precedes all the others and is termed wonder. I call this passion imperfect because it is in no way excited by either the idea or the sensation of good.

When the brain is struck in places in which it has never been struck before, or when it is struck in an entirely new way, the soul is sensibly affected and therefore closely attends to whatever is novel in its object; because of this, merely by tickling the soles of the feet, a very intense sensation is excited in the soul, more through its novelty than through the strength of the impression. There are still other reasons for the soul's attention to novelties, but I have accounted for them while discussing the natural inclinations; here the soul is being considered only in relation to the body, and in this context, extraordinary agitation of the animal spirits is the cause of its attention to novelties, for the ordinary agitation of the animal spirits arouses our attention but very little.

Wonder by itself involves the consideration of things only as they are in themselves, or as they appear; here we do not view them in relation to ourselves, or regard them as either good or evil. For this reason, the spirits are not distrib-

[a] Bk. 2, ch. 5.

uted in the muscles to dispose the body for the pursuit of good or the flight from evil, and do not agitate the nerves leading to the heart and to the other viscera in order to hasten or delay the fermentation and motion of the blood, as happens in all the other passions. All the spirits move toward the brain in order to trace in it a lively and distinct image of the new object so that the soul might consider it and recognize it—but the rest of the body remains, as it were, immobile and in the same state. As there is no emotion in the soul, neither is there any movement in the body.

Should the objects of our wonder appear great, our wonder is always followed by esteem and sometimes veneration. When they appear small, on the other hand, it is always accompanied by scorn and sometimes disdain.

The idea of greatness produces a great deal of motion in the spirits in the brain, and the trace representing it is preserved for a long time. A great deal of motion in the spirits likewise excites the idea of great size in the soul and fixes the mind's attention on the consideration of this idea.

The idea of smallness produces little motion in the spirits in the brain, and the trace representing it is not preserved for very long. Little motion of the spirits likewise excites an idea of smallness in the soul, and hardly fixes the mind's attention on the consideration of this idea. These things deserve to be well noted.

When we consider ourselves or something joined to us, our wonder is always accompanied by some passion that moves us. But we are moved only in the soul and in the spirits leading to the heart, because as there is no good to be pursued nor any evil to be avoided, the spirits are not distributed in the muscles to dispose the body to some action.

Viewing the perfection of one's own being or of something belonging to it naturally produces pride or esteem for one's self, scorn for others, joy, and several other passions. Viewing one's own grandeur produces haughtiness; viewing one's strength, valor, or boldness and viewing any other worthwhile quality naturally produces another passion that will always be a kind of pride.

The contemplation of some imperfection in one's being or in something belonging to it, on the other hand, naturally produces humility, scorn for one's self, respect for others, sadness, and several other passions. The contemplation of one's insignificance produces abasement, of one's weakness, timidity, and the contemplation of any disadvantageous quality naturally produces another passion that will always be a kind of humility. But this humility, as well as the pride I have just spoken of, is really neither a virtue nor a vice. Both are only passions or involuntary emotions that nonetheless are quite useful to civil society, and, in certain instances, are absolutely necessary for the preservation of the life or goods of those who are moved by them.

It is necessary, for example, to be humble and timid, and even to give external evidence of one's mental disposition by a humble bearing and by a respectful or timorous appearance, when one is in the presence of a person of high quality or of a man who is haughty and powerful; for it is almost always advantageous to the body's welfare for the imagination to humble itself when perceiving sensible grandeur and for it to give external indication of its internal veneration and submission. This occurs naturally and mechanically, with the will having no role and often in spite of its resistance. Even such beasts as dogs, which must submit to those with whom they live, generally have their machine disposed in such a way that they assume the appearance they must in relation to those around them, for this is absolutely necessary for their preservation. The reason why birds and several other animals do not have the bodily disposition to assume this appearance is that they have no need to submit to those whose wrath they can escape through flight, or on whom the preservation of their life does not depend.

I cannot overemphasize the fact that all the passions excited in us by the sight of some external object mechanically produce their particular facial expression in those struck by them, i.e., an appearance that by its impression mechanically disposes everyone seeing it to those passions and actions useful to the good of society. Even wonder when caused in us only by the sight of something that is external to us and that can be viewed by others, produces an expression upon our face that mechanically arouses the wonder of others, and that even acts on their brain in such a highly regulated way that the spirits it contains are forced into the muscles of their face to form an expression on it very much like our own.

This communication of the soul's passions and of motion in the animal spirits (to join men together in relation to good and evil and to make them exactly like one another not only in their mental disposition but also in the condition of their body) is all the more considerable as the passions are more violent, because the animal spirits are then more violently agitated. Now this must be so, because when goods or evils are greater or more present, we must attend to them more, and we must join more closely with others in order to flee or pursue them. But when the passions are more moderate, as is usually the case with wonder, their communication is imperceptible and they do not produce any expression, by means of which they are usually communicated. As there is nothing urgent, they have no cause to affect the imagination of others or to distract them from their occupations, which are perhaps more urgent than the causes of these passions.

Nothing is more marvelous than this arrangement of our passions and this disposition of our bodies with regard to objects surrounding us. All that mechanically takes place in us is worthy of the wisdom of Him who has created us. And, as God has made us capable of all the passions that move us mainly in order to link us to all sensible things for the preservation of society and of our sensible being, His plan is so faithfully carried out in the construction of His work that we cannot fail to wonder at its construction and design.

Nonetheless, our passions and all the imperceptible bonds by which we are bound to everything around us are often, through our own fault, important causes of our errors and disorders; for we do not use our passions as we should, we give them free reign and are even ignorant of the limits we should place on their influence. Thus, even the passions such as wonder that are very weak and move us least are strong enough to plunge us into error. Here are several examples of this.

When men, and especially those with an active imagination, consider the best side of themselves, they are almost always very satisfied with themselves, and their inner satisfaction never fails to increase when they compare themselves to others whose imagination is not so active. Moreover, there are so many people who wonder at or admire them and so few who resist them with any success or commendation (for who commends reason in opposition to a strong and lively imagination?). Finally, the facial expression of those who listen to them is so obviously one of submission and respect as well as of admiration for each new word they profer that they begin to admire themselves, and their imagination, which magnifies all their good points, makes them extremely content with themselves. For if we cannot see a man moved by some passion without receiving an impression of that passion or without in some way taking part in his sensations, how would it be possible for those who are surrounded by a great number of admirers not to accede to a passion that flatters self-love so agreeably.

Now this high esteem in which people of strong and lively imagination hold themselves and their qualities swells their courage and causes them to assume a dominant and decisive bearing. They listen to others only with scorn, they answer them only by jeering, they think only in relation to themselves. As they regard the mind's attention—so necessary for the discovery of truth—as a kind of slavery, they are altogether undisciplined. Pride, ignorance, and blindness will always go hand in hand. Strong minds, or rather proud and haughty minds, do not wish to be disciples of the truth; they enter into themselves only to contemplate and admire themselves. Thus, he who resists the proud shines in the midst of their shadows without enlightening them.

On the other hand, there is a certain disposition in the animal spirits and blood that gives us a too low opinion of ourselves. The scarcity, sluggishness, and fineness of the animal spirits combined with the coarseness of the brain's fibers makes our imagination weak and languid. Furthermore, the perception, or rather the confused sensation of this weakness or sluggishness of our imagination, leads us into a kind of vicious humility that might be termed spiritual baseness.

All men are capable of truth, but not all of them appeal to Him who alone is capable of imparting it. The haughty turn toward themselves and listen only to themselves, and the falsely humble turn to the haughty and bow before whatever they decide. Both listen only to men. The mind of the haughty is ruled by the fermentation of their blood, i.e., by their imagination; the mind of the falsely humble submits before the dominant bearing of the haughty. Thus, both are subjected to vanity and lies. The haughty man is rich and powerful, has a huge following, and measures his grandeur by the size of his following and his power by the strength of the horses pulling his coach. The falsely humble man, having the same mind and the same principles, is miserable, poor, weak and languid, and imagines that he is practically nothing because he possesses nothing. Yet we are not the same as our following and so far from it being the case that a great deal of blood and spirits or vigor and impetuosity of the imagination lead us to the truth, that on the contrary, there is nothing that turns us away from it more. Rather, it is the dullards, if I may so term them, the cold and languid minds who are best capable of discovering the most well-founded as well as the most hidden truths. With quieter passions, they are able to listen to the truth that teaches them in the innermost recesses of their reason; but unhappily for them, they do not listen attentively to its words. The truth speaks without show and in a low voice, whereas only a great deal of noise arouses them. Nothing whose appearance to the senses is not great or spectacular convinces them; they enjoy being dazzled. Rather than listening to the truth itself, they prefer to give ear to those philosophers who spell out nothing but their dreams and visions, and who assure them, like the false prophets, that the truth has spoken to them when in fact it has not spoken to them at all. For more than four thousand years, human pride has fed them lies without any resistance from them; they even honor these lies and preserve them as holy and divine traditions. The God of truth has seemingly left them, they no longer think about Him or consult Him; they no longer meditate, and they mask their laziness and unconcern with the false appearance of a holy humility.

It is true that we are unable to discover the truth by ourselves; but we can always do so with Him who enlightens us, and we can never do so with even the concerted help of all men. Even those who best know the truth cannot reveal it to us unless we ourselves ask Him whom they have asked and unless He heeds our appeal as He has heeded theirs. Men, therefore, should not be taken at their word, for they are all deceivers; but we should believe Him who is unable to deceive and to whom we must always appeal. We should place no trust in those who speak only to the ears, who instruct only the body, and who act on at most the imagination. But our undivided attention and sincere belief must be given to Him who speaks to the mind and whose instruction is so penetrating as to enlighten and fortify the inner man against the unceasing wiles and ill treatment of the outer man. I repeat these things so often because I think they deserve serious thought. God alone must be honored—only He is able to radiate light in us, just as only He is able to produce pleasure in us.

It sometimes happens that the animal spirits and the rest of the body are well disposed toward hunting, dancing, racing, and generally toward all those exercises in which the strength and agility of the body is most apparent. This disposition is common among young people and especially among those whose body is not yet completely developed. Children are unable to stay still and are always moving about when they are given their way. Since their muscles are not yet developed or even completely formed, God, who as the Author of nature regulates the soul's pleasures in relation to the good of the body, has them find pleasure in exercise in order that their body might be strengthened. Thus, while the flesh and fibers of the nerves are still soft, the paths that the animal spirits must take to produce all the various kinds of movement are traced out and preserved and no humors accumulate to ferment them or cause decay.

The confused sensation that young people have of their bodily disposition makes them enjoy feeling its strength and agility. They admire themselves when they can exercise control over its movements or when they can perform extraordinary feats, and they even desire the presence of spectators and admirers. Their passion for physical exercise gradually takes a deep hold on them, and this is one of the main causes of the ignorance and brutality of men. For, besides the time lost in these activities, the little use made of the mind causes the main part of the brain, whose flexibility produces the mind's force and vivacity, to become entirely inflexible, and the animal spirits to have difficulty in spreading out in the brain in the way necessary for us to choose our thoughts.

This leaves the greater part of the nobility and those who wage war incapable of applying themselves to anything. All their reasoning is cavalier, as the saying goes, and if you attempt to tell them what they do not want to hear, rather than there being some thought about a proper response, their animal spirits insensibly flow into the muscles that raise the arm. Almost without thinking they respond with a blow, or with some menacing gesture, because the spirits, agitated by the words they hear, are led into those places to which they are accustomed by exercise. The sensation they have of their body's strength entrenches them in these insolent ways, and the respectful air of their listeners foolishly emboldens them to say foolish things in a haughty and brutal way. They even think that they have spoken well because the fear and prudence of others have been favorable to them.

It is impossible to have studied anything, or to have mastered any science, and not realize this; one cannot be an author or a doctor and not remember it. But this realization alone naturally produces such a great number of defects, even in the minds of many people, that it would be better for them not to have the quality for which they are honored. Since they imagine it to be their best part, they always contemplate it with great pleasure, they publicize it as much as possible, and, finally, they would have it give them the right to judge everything without examination. If one is uncircumspect enough to contradict them, they first try to suggest, carefully and with an air of gentleness and charity, just who they are and the right they have to decide. But if one is then bold enough to resist them, and if they have no further response, they then openly state their opinion of themselves and of those who resist them.

All our inner sensations of some advantage we possess naturally swell our courage. A cavalier who feels that he is well armed and has a good horse, and who does not lack for blood or spirits, is ready to undertake anything; his disposition is such as to make him bold and daring. This is also true of a man of learning. When he thinks himself learned and the boldness of his heart has corrupted his mind, he becomes, so to speak, bold and daring against the truth. Sometimes he wages a headstrong battle against the truth without recognizing it, and sometimes, having recognized it, he betrays it. Relying on his false learning, he is always ready to maintain either the affirmative or the negative on any question, depending on whether he is moved by a spirit of contradiction.

Such is not the case with those who do not pride themselves in their grasp of science; they are not so headstrong. Rarely do they speak if they do not have something to say, and it even happens frequently enough that they remain silent while they should speak. They do not have the reputation or the external trappings of science that lead one into speaking without knowing what one is talking about; they are able to be silent. But the learned are afraid to remain silent, for they know well that they will be scorned if they are quiet, even when they have nothing to say, and that they will not always be scorned though they should utter only foolishness, provided that their utterances should sound scientific.

What enables men to think also enables them to attain truth; but neither honors nor riches, nor degrees, nor false learning enables them to think; rather, it is their nature that does so. Men are made for thinking because they are made for the truth. Even bodily health does not enable men to think well; all it can do is to obstruct thought less than does sickness. Our body helps us to a certain extent to sense and imagine, but it in no way helps us to understand. For while we are unable to meditate attentively without the help of the body in resisting the continuous efforts of the senses and the passions, which upset and dissipate our meditation (because we are now able to overcome the body only by means of the body), yet it is obvious that the body can neither enlighten the mind nor produce in it the light of understanding. For every idea that reveals the truth comes from the truth itself. What the soul receives through the body is only for the body, and when it turns toward phantasms, it sees only illusions and phantasms, i.e., it does not see things as they are in themselves, but only the relations they can have with the body.

The idea of greatness or smallness that we have of ourselves might be a frequent occasion of error for us, but the impression made by the idea that we have of external objects related to us is no less dangerous. We have just said that the idea of greatness is always accompanied by a great deal of motion in the spirits and that this motion is always accompanied by an idea of greatness, and that the idea of smallness, on the other hand, is always accompanied by very little motion of the spirits and that this motion is always accompanied by an idea of smallness. From this premise the conclusion is easily drawn that the things that produce a great deal of motion in our spirits must naturally appear greater to us, i.e., stronger, more real, and more perfect than other things, for by greatness I mean all these things and several others. Thus, if we judge them according to the motion of the spirits and not according to the pure idea of truth, sensible goods must appear to us greater and more solid than those that are not sensed. A great house, a magnificent retinue, fine furniture, offices, honors, riches, all appear greater and more real than virtue and justice.

When the mind's clear perception compares virtue to riches, virtue is preferred; but when the eyes and the imagination are used and these things are judged only according to the disturbance they excite in our spirits, riches are preferred without fail to virtue.

This is the basis for our belief that things that are spiritual, or that are not sensed, are practically nothing, that our mind's ideas are less worthy than the objects they represent, that air and water have less reality and substance than metals and glass, that the space between the earth and the firmament is void, and that the bodies filling it do not have as much reality and solidity as the sun and stars. In short, if we fall into an infinity of errors concerning the nature and perfection of things, it is because we base our reasoning on this false premise.

Given that a great deal of motion in the spirits and, consequently, a strong passion always accompanies a sensible idea of greatness, and given that little motion in the spirits and, consequently, a weak passion accompanies a sensible idea of smallness, a great deal of our attention and too much of our time is occupied by everything that excites a sensible idea of greatness, and anything yielding only a sensible idea of smallness receives our neglect. Those great bodies, for example, that revolve above our heads have always greatly impressed men. At first they were adored on account of their size and brilliance. Other, bolder minds examined their motion, with the result that stars have been the object either of study or of veneration of many people down through the centuries. It might even be said that the fear of those imaginary influences that still affect astrologers and weaker minds is a kind of adoration that a humbled imagination pays to the idea of greatness representing the celestial bodies.

The human body, on the other hand, which is infinitely more admirable and more deserving of our attention than all that can be known about Jupiter, Saturn, and the other planets, is practically unknown. The sensible idea of particles of dissected flesh has nothing magnificent about it, and even causes disgust and horror. As a result of this, it has been only in recent times that intelligent men have considered anatomy as a science worthy of their attention. There have been princes and kings who have boasted of being astronomers. The greatness of the stars seemed to agree with the greatness of their dignity; but I do not think that any of them have so honored the knowledge of anatomy, or the dissection of a heart or a brain. The same thing is true of many other sciences.

Rare and extraordinary things produce greater and more perceptible motion in the spirits than things seen everyday; we wonder at them, and consequently we assign an idea of greatness to them—and hence they excite passions of esteem and respect in the spirits. Here we have the source of the confusion in many people's reason: many of them are so taken with what remains to us of antiquity, with what comes from far off, or with what is rare and out of the ordinary that their mind is like a slave to these things, for the mind dares not judge or place itself above what it reveres.

Granted, truth lies in no great danger from people's love of the medals, arms, and apparel of ancient people, or of those of the Chinese or savages. It is not altogether useless to know a map of ancient Rome, or of the roads of Tonking to Nanking, although it would be of greater use for us to know the roads from Paris to St. Germain or Versailles. Finally, there is nothing wrong with people wanting to know the true history of the war between the Greeks and Persians, or between the Tartars and the Chinese, or with their having a great liking for Thucydides or Xenophon or whomever you like. But we cannot allow admiration of antiquity to dominate reason, or to prohibit the mind from examining the views of the ancients in such a way that those who discover and demonstrate their falsity are viewed as rash and presumptuous.

Truths are for all time. If Aristotle discovered any truths, they can be discovered as well today. The views of this author must be proved as they may, for if his views were sound in his own time, they are still so now. To attempt to prove truths of nature through human authority is mere illusion. You might perhaps prove that Aristotle had certain thoughts on certain subjects, but it is not very reasonable to read Aristotle or any other author with a great deal of care and trouble only to learn historical views and to teach them to others.

I cannot remain calm at the thought that certain universities that were founded for no other purpose than to pursue and defend the truth have become cliques that boast of studying and defending the views of certain men. Only with indignation can I read the books that issue daily from philosophers and physicians, in which quotations are so frequent that I would take them more as the writings of theologians or canon lawyers than as philosophical or medical treatises. For I cannot allow reason and experience to be abandoned in favor of blind submission to the fictions of Aristotle, Plato, Epicurus, or any other philosopher.

Yet I would perhaps remain calm and silent before such extreme behavior if I were not harmed by it, i.e., if these gentlemen did not war against the truth, which alone I feel obliged to espouse. But admiration for the ancients' reveries inspires them with a blind zeal against newly discovered truths, with the result that they discredit them without knowing them and oppose them without understanding them; and, through the strength of their imagination, they spread these same prejudices among the minds and hearts of their admirers.

Since the only basis for their judgments of newly discovered truths is the esteem that they have for their favorite authors, and since those whom they have met and spoken with do not have the great and wonderful appearance that the imagination attaches to ancient authors, they are unable to hold them in esteem. For as the idea we have of men living in our century is not accompanied by an extraordinary motion affecting the mind, it naturally arouses nothing but scorn. Painters and sculptors never represent the philosophers of antiquity as ordinary men; they give them a huge head with a broad and high forehead and a magnificently full beard. This is a sure proof that the common man has naturally formed a similar idea of them, for painters depict things as they see them, following the natural impulses of the imagination. Thus, the ancients are almost always regarded as altogether exceptional men. But the imagination represents men of our time, on the other hand, as similar to those we see every day; and since it produces no extraordinary motion in the spirits, it excites nothing but contempt and indifference for them in the soul.

I have met Descartes, said one of these learned men who admire only antiquity; I knew him, I spoke with him several times, and he was an honest man and no fool, but he had no exceptional talents. This fellow had a low opinion of Descartes' philosophy because he spoke with the man for a few minutes and failed to notice anything about him that smacked of the wonderfully great appearance which warms the imagination. He even pretends to give a proper answer to this philosopher's arguments (which actually confuse him a little) by saying haughtily that he used to know him. I wish that these types could see Aristotle otherwise than as he has been depicted and converse with him for an hour, provided that he did not speak to them in Greek but in French, and without making himself known until after they had declared their opinion of him.

Things marked by novelty (either because they are new in themselves, or because they appear in a new order or a new location) agitate us a great deal, since they affect the brain in areas that are more sensible because less exposed to the flow of spirits. Things that are perceptibly marked by greatness also agitate us a great deal, for they excite a great deal of motion in our spirits. But things that are simultaneously characterized both by greatness and novelty not only agitate us, they overwhelm us with the disturbances they produce in us.

Those, for example, who speak only in paradoxes are admired, for everything they say has a novel character. Those who speak only in well-turned phrases and who carefully choose their words for effect are respected, for what they say appears to be marked by greatness. But those who combine both novelty and effect, the great and the uncommon, almost never fail to overwhelm the common man, even when what they say is asinine. This pompous nonsense, *insani fulgores,* the false lights of those who rant on in this way, almost always succeed in dazzling weaker minds; they catch their imagination unawares with such a vivid impression that they are overwhelmed and actually honor the power that knocks them down and blinds them, and they admire as shining truths confused sensations that cannot even be expressed.

BOOK FIVE

Chapter Eight

A continuation of the same subject. Of the good use that can be made of wonder and the other passions.

Each of the passions has two notable effects: it applies the mind, and wins over the heart. Insofar as they apply the mind, the passions can be very helpful in knowing the truth provided we know how to use them; for applying the mind produces light, and light reveals the truth. But insofar as they win the heart, the passions always have a bad effect because they win over the heart only by corrupting reason and representing things to it not as they are in themselves or according to the truth but according to their relation to us.

Of all the passions, wonder least affects the heart. For we are agitated by seeing things as good or evil, whereas seeing things as new, great, or extraordinary, with no other relation to us, hardly affects us. Thus, the wonder that arises when we realize the greatness or excellence of something we have just begun to consider corrupts reason a great deal less than any of the other passions, and it might even be put to great use toward knowing the truth, provided that great care is taken to prevent it from being followed by other passions, as it almost always is.

In wonder, the animal spirits are forced toward those parts of the brain representing the new object as it is in itself; there they make distinct traces that are deep enough to be preserved a long time. Consequently, the mind has a sufficiently clear idea of the object and easily remembers it. Hence, it is undeniable that wonder is very useful to the sciences since it applies and illumines the mind. Such is not the case with the other passions; they apply the mind, but they do not illumine it. They apply it because they arouse the animal spirits whose flow is necessary for the formation and preservation of traces; but they do not illumine it, or they illumine it with a deceptive light because they move these same spirits in such a way that they represent objects only according to their relation to us and not as they are in themselves.

Nothing is more difficult than applying oneself for any length of time to something that fails to excite our wonder, since then the animal spirits are not so easily led into those parts of the brain necessary to represent it. Although our attention may be called for, it is not forthcoming, or at least not for any length of time, however we may be convinced in the abstract (which in no way agitates the spirits) that the thing in question deserves our attention. We must trick our imagination in order to stir our spirits, and we must represent the subject we wish to think about in a novel way so that an impulse of wonder might be excited in us.

We see people every day who have no taste for study; nothing appears more troublesome to them than the application of their mind. They are convinced that they must study certain things, to which they direct all their energy; but their efforts are wasted, for they accomplish little and immediately give up. True, the animal spirits obey the orders of the will, and we can become attentive if we wish. But when the volition that commands is a volition of pure reason unsustained by some passion, it is so weak and languid that our ideas are more like phantasms that we can barely make out and that quickly disappear. Our animal spirits receive so many secret directives from the passions, and are so inclined both by nature and by habit to carry them out, that they are easily diverted from the new and difficult channels into which the will would lead them. As a result of this, it is mainly in these instances that we need a special grace in order to know the truth, because with our own resources alone we cannot long resist the body's weight, which burdens the mind, or if we can, we never accomplish everything of which we are capable.

But when we are aroused by an impulse of wonder, the animal spirits naturally flow into the traces made by the object exciting it. They clearly represent this object to the mind, and they perform whatever is required in the brain in order to produce light and certainty without the will exhausting itself in controlling the unruly spirits. Thus, those capable of wonder are better suited for study than those who are not; they are nimble-minded whereas the others are dense.

Nonetheless, when wonder becomes excessive to the point of stupefaction, or when it no longer involves a rational curiosity, it produces a very bad effect. The animal spirits are then entirely occupied in representing the object according to its aspect we are wondering at. We do not think about its other facets that might also be considered. The animal spirits do not flow into the various parts of the body to perform even their ordinary functions, but instead impress such deep traces of the objects they represent that they rupture enough of the brain's fibers to make the idea that they have excited indelible.

It is not enough that wonder should arouse our attention, it must also make us inquisitive; it is not enough that we should have considered one aspect of an object—to know it fully we must be inquisitive enough to examine all its aspects; otherwise we have no basis for a solid judgment. Thus, when wonder does not lead us to conduct a complete examination of things, or when it prevents us from doing so, it is altogether useless in knowing the truth. In these cases, it stocks the mind only with probabilities and leads us into rash judgments about everything.

It is not enough to wonder simply for the sake of wondering; we must wonder in order then to examine more easily. The animal spirits naturally aroused in wonder are made available to the soul to be used in more distinctly representing its object and for knowing it better. This is nature's way, for wonder should lead to inquisitiveness and inquisitiveness to knowledge of the truth. But the soul is unable to use its own powers. It prefers the pleasant sensation it receives from the abundance of spirits affecting it that are aroused by the object of its awareness. It prefers simply to perceive its wealth than to dissipate it through use, and in this it is like the misers who prefer to keep their money rather than use it for their needs.

Men are generally pleased to be affected by any given passion. They not only pay to be touched with sadness by the presentation of some tragedy; they also pay prestidigitators in order to be impressed by their wonders, and surely they cannot be said to do so in order to be deceived. This inner delight we feel while engaged in wonder is thus the main reason why we linger in that state without putting it to the use that nature and reason prescribe to us, for this inner delight attaches people so closely to the objects of their wonder that they become angry when shown the vanity of it. An afflicted man so enjoys his sadness that he becomes vexed when we try to cheer him. The same is true of those engaged in wonder; they seem to be offended when an attempt is made to show them that there is no basis for their wonder because they feel the secret pleasure they receive from their passion diminish as the idea causing it is removed from their mind.

The passions always seek their own justification, and they imperceptibly persuade us that we are right in following them. The pleasure and delight they cause the mind (which must judge them) to feel compromises it in their favor. What follows is roughly the way they might be said to make the mind reason. We should judge things only according to the ideas we have of them, and of all our ideas the most sensible are the most real since they act on us with greatest force. They, therefore, ought to be the basis for our judgments. Now the object of my wonder contains a sensible idea of greatness; I must therefore judge it according to this idea, for greatness must arouse my esteem and love. Thus, I am right in pausing over this object and busying myself with it. Indeed, the pleasure I feel upon viewing the idea representing this object is a natural proof that it is to my benefit to think about it; for, in short, I seem to become greater myself when I think about it, and my mind seems to have greater scope when it embraces so great an idea. The mind ceases to be when it no longer thinks about something; and if this idea were to vanish, it seems to me that my mind would vanish with it, or that it would become smaller and more confined if it attached itself to a smaller idea. The preservation of this great idea, therefore, involves the preservation of the greatness and perfection of my being; therefore, my wonder is justified. Indeed, if I were to receive my due, I should cause wonder in others. Through the relation I have with great things, I am something great; I possess them to a certain extent through my wonder at them, and I enjoy them as a result of my hope of further possessing them. Other men would be as happy as I if they realized my greatness and like me attached themselves to the cause producing it; but they are blind men, ignorant of great and beautiful things and unable to raise themselves up.

The mind might be said to reason naturally and reflectively in this way when it lets itself be led by the false lights of its passions. These arguments have a certain plausibility, but it is clear that they have no solid foundation; and yet their plausibility, or rather the confused sensation of plausibility, accompanying these natural and unreflective arguments is so strong that, unless we are careful, it never fails to seduce us.

When, for example, poetry, history, chemistry, or whatever other human science you like has struck chords of wonder in the imagination of a young man, unless he is careful to watch the effect this has on his mind, unless he thoroughly examines what is to be gained from these sciences, unless he compares the trouble he will have in learning them to the profit he will receive from them, in short, unless he is as inquisitive as he should be in order to form a proper judgment, there is a great danger that his wonder, which shows him these sciences only in their best light, will seduce him. It is even to be feared that it will so corrupt his heart that he will be no longer able to give up his illusion, although he may recognize it as such later on, because the deep traces engraved in his brain by continuous wonder cannot be erased. This is why he must always guard the purity of his imagination, i.e., he must prevent these dangerous traces that corrupt the mind and heart from being formed in the brain. The following is the way this should be done, which will prove useful not only against excessive wonder but also against all the other passions.

When the motion of the animal spirits is strong enough to form the deep traces in the brain that corrupt the imagination, it is always accompanied by some emotion in the soul. Thus, since the soul cannot be moved without being aware of it, it receives sufficient warning to carefully examine whether it is to its advantage for these traces to be completed and made more permanent. But since the mind while in a state of emotion is not sufficiently free to judge the usefulness of these traces (because the emotion deceives it and inclines it to favor them), every effort must be made to halt this emotion or to divert elsewhere the motion of the spirits that causes it. In the meanwhile, it is absolutely necessary to suspend one's judgment.

Now it should not be imagined that the soul through its will alone can always arrest the flow of spirits preventing it from using its reason. Its ordinary powers are not sufficient to halt motion that it itself has not excited. Consequently, it must resort to strategems in an attempt to deceive an enemy that attacks only by surprise.

As motion in the spirits awakens certain thoughts in the soul, so our thoughts excite certain kinds of motion in our brain. Thus, when we wish to stop some motion of the spirits that has been excited in us, it is not enough to will it to stop, for that alone is not always capable of stopping it, but cleverness must be used by representing to ourselves things contrary to those exciting and sustaining the motion; this will cause revulsion. But if we wish only to divert motion in the spirits that has already been excited, we need think not of contrary things but only of things different from those producing the motion, and this will undoubtedly cause a diversion.

But because diversion and revulsion will vary as our new thoughts are accompanied by more or less motion in the spirits, we should be careful to note which thoughts most agitate us in order to be able to represent them to the imagination on those urgent occasions when it seduces us; and we must try to so habituate ourselves to resisting the imagination that it no longer excites any motion in the soul that catches us unawares.

If we carefully attach the thought of eternity, or some other solid thought, to the extraordinary motions excited in us, these violent and extraordinary motions will no longer occur without at the same time awakening the idea, and without, as a result, furnishing us with a defense against them. These things are proved by experience and by the reasons we have cited in the chapter "The Connection of Ideas";[a] as a result, it should not be imagined that strategy cannot overcome the passions when we are of a firm will to do so.

Nevertheless, it should not be assumed that by this sort of defense we can avoid all error or make ourselves impregnable. There are several reasons for this. First, it is difficult to acquire and preserve the habit of having our extraordinary motions arouse ideas with which to combat them. Second, granted that the habit is acquired, motion in the spirits directly excites the ideas that must be combatted, and only indirectly those with which to combat them. Since the evil ideas are thus the main ideas, they will always be stronger than the ancillary ideas, and it will always be necessary for the will to resist them. Third, this motion of the spirits can be so violent that they occupy the soul's entire capacity, as a result of which there is no room, so to speak, for it to receive the ancillary idea to cause revulsion in the spirits, or to receive the idea in such a way that it might be attentively considered. Finally, there are so many particular circumstances capable of neutralizing this remedy that, though we should not neglect it, it should not be relied on too much. We should always have recourse to prayer to receive the necessary help from heaven at the time of battle, and we must at the same time present to the mind truths so strong and well-founded that by means of them we can overcome the most violent passions. I must note here in passing that the pious often fall back into the same faults because they have filled their minds with a great number of truths that have more brilliance than strength and that are better for dividing and weakening their mind than for strengthening it against temptations, whereas denser, less enlightened sorts are often faithful to their duty because they have a grasp on some well-founded truth that strengthens them and sustains them in all encounters.

[a] *Page* - [bk. 2, pt. 1, ch. 5].

BOOK FIVE
Chapter Nine

Love and aversion, and their principal kinds.

Love and aversion are the first passions to follow wonder. We do not long consider an object without discovering the relations it has to us or to something that we love. Since the object that we love, and to which we are consequently joined by our love, is almost always present to us, as is the object of our wonder, our mind easily and without much thought makes the necessary comparisons to discover the relations they have between themselves and to us, or else it naturally receives this information from the prevenient sensations of pleasure and pain. Then the impulse of love that we have for ourselves and for the object we love is extended to the object of our wonder if the relation in which it immediately stands to us or to some object joined to us appears to our advantage according to either our knowledge or sensation of it. Now this new impulse of the soul, or rather, this newly determined impulse of the soul, which is connected with the motion in the animal spirits and which is followed by the sensation accompanying the new disposition produced in the brain by the new motion of the spirits, is the passion I here term *love*.

But if we sense through some pain, or if we discover through clear and certain knowledge, that being joined or related to the object of our wonder is disadvantageous to us or to something joined to us, then the impulse of love we have for ourselves and for the thing joined to us is either restricted to us or is directed toward the thing joined to us. The impulse does not follow what the mind has perceived, i.e., it does not direct itself toward the object of our wonder. But since the impulse toward the good in general that the Author of nature unceasingly impresses upon the soul leads it only toward what it is aware of and what is sensibly perceived as either good or agreeable to its nature, the soul's refusal to attach itself to an object that in no way agrees with it might be said to be a kind of voluntary impulse whose object is nonbeing. This voluntary impulse of the soul, which is connected with motion in the spirits and the blood, and which is followed by the sensation accompanying the new disposition produced by the spirits in the brain, is the passion that I here term *aversion*.

This passion is entirely contrary to love, yet is never without love. It is entirely contrary to love because it separates whereas love joins; its object is nonbeing whereas love always has being for its object; it resists the natural impulse and neutralizes it, whereas love yields to it and allows it to triumph. But it is never separated from love; for if evil, which is its object, is taken as the privation of good, to flee evil is to flee the privation of good, i.e., to tend toward the good, and thus aversion to the privation of good is the love of good. But if evil is taken as pain, aversion to pain is not hatred of the privation of pleasure since, given that pain is a sensation as real as pleasure, it is not its privation; but since aversion to pain is the aversion to some inner misery, we would not have this aversion if we did not love ourselves. Finally, evil might be taken to be what causes pain in us or for what deprives us of good, and in this case aversion depends on our love for ourselves or the love of something to which we desire to be joined. Love and aversion, then, are the two contrary passions that give birth to all others; but love is the first, chief, and most universal.

In morals, virtues or kinds of charity are often distinguished according to the differences in their objects; but this procedure sometimes obscures the real idea we ought to have of virtue, which depends more on the end or purpose assigned to it than on anything else. We believe the same thing to hold regarding the passions. We shall not distinguish them here according to their objects because a single object can excite all of them and because ten thousand objects might excite but a single one of them. For although objects might be different from one another, they are not always different in relation to us, and they do not excite different passions in us. The baton of a marshal of France that is promised to someone is different from a bishop's crozier promised to someone; yet these two marks of honor excite roughly the same passion in men of ambition because they arouse in the mind the same idea of good. But a baton of a marshal of France that is promised, granted, possessed, and taken away excites entirely different passions because it awakens in the mind different ideas of good. The passions, therefore, should not be multiplied according to the different objects causing them, but only as many should be admitted as there are ancillary ideas that accompany our principal idea of good or evil and that significantly change it in relation to us. For the general idea of good or the sensation of pleasure, which is a good to those who enjoy it, acts on the soul and the animal spirits and produces the general passion of love. The ideas ancillary to this good determine the soul's general agitation as well as the flow of the animal spirits in a specific way that disposes the mind and the body as they should be with regard to the good we perceive, and they thus produce all the particular passions.

Thus, the general idea of good produces an indeterminate love that is but a result of self-love or the natural desire to be happy.

The idea of some good we possess produces joyous love.

The idea of a good we do not possess but hope to possess, i.e., that we judge ourselves capable of possessing, produces a desiderative love.

Finally, the idea of a good we do not possess and do not hope to possess, or, what is to the same effect, the idea of a good we do not hope to possess without loss of some other good, or whose possession we cannot maintain, produces a melancholy love. These are the three simple or basic passions that have the good as their object; for hope that produces joy is not an emotion of the soul but a simple judgment.

But it should be pointed out that men do not limit their being to themselves, and that they extend it to everything and everybody with whom it seems advantageous to them to strike a union. Consequently, we are inclined to believe that they possess good to some extent when it is enjoyed by their friends, though they do not immediately possess it themselves. Thus, when I say that the possession of good produces joy, I mean not only possession in the sense of immediate union but all other kinds; for we naturally feel joy when those whom we love have good fortune.

Evil, as I have already said, can be taken in three ways: privation of good, pain, or the thing causing privation of good or producing pain.

In the first sense, since the idea of evil is the same as the idea of good we do not possess, clearly this idea produces sadness, or desire, or even joy; for joy is always produced when we feel deprived of the privation of good, i.e., when we possess the good. As a result, the passions pertaining to evil in this sense are the same as those pertaining to the good, because, in effect, they also have the good for their object.

But if by evil, pain is meant (which alone is always a real evil to those who suffer it, as long as they suffer it), then the sensation of this evil produces sadness and the desire for the elimination of this evil—passions that are sorts of aversion rather than love, for their impulse is entirely opposed to that accompanying the perception of good; their impulse is only the soul's opposition to a natural impression, i.e., an impulse whose object is nonbeing.

The actual sensation of pain produces a melancholy aversion.

The pain we do not suffer but fear produces a desiderative aversion whose object is the nonbeing of that pain.

Finally, the pain we neither suffer nor fear, or, what is to the same effect, the pain we do not fear suffering without being greatly recompensed, or the pain of which we are relieved, produces a joyous aversion. These are the three simple or basic passions that have evil as their object, for fear that produces sadness is not an emotion of the soul but a simple judgment.

Lastly, if by evil is meant the person or thing that deprives us of good or that makes us suffer pain, the idea of evil produces either an impulse of love and aversion together or simply an impulse of aversion. The idea of evil produces an impulse of love and aversion together when the evil deprives us of good, for by the same impulse we tend toward the good and flee from what prevents its possession. But this idea produces only an impulse of aversion when the idea of some evil makes us suffer pain, for by the same impulse of aversion we abhor pain and whatever makes us suffer it.

Thus, there are three simple or basic passions concerned with good, and three others concerned with pain or what causes pain, to wit, joy, desire, and sadness, for we are joyful when good is present and evil has passed, we feel sad when good has passed and evil is present, and we are moved by desire when good and evil are to come.

The passions concerned with good are specific determinations of the impulse God gives us for the good in general, and for this reason their object is real; but the others that do not have God as the cause of their impulse, have only nonbeing as their object, i.e., these passions are cessations of impulse rather than real impulses; here we cease willing rather than willing something.

BOOK FIVE

Chapter Ten

The particular passions and, in general, how to recognize and to give an account of the errors they cause.

If you consider the makeup of the passions, you will easily see that they are countless and that there are many more of them than we have words to express. The passions owe their differences not only to the different combinations of the three basic passions, for there would be very few differences of this sort, but also to the different perceptions and judgments that cause them or accompany them. These different judgments that the soul makes of goods and evils produce different kinds of motions in the animal spirits in order to dispose the body with regard to the object; and they consequently cause sensations in the soul that are not altogether similar. They thus cause the difference we notice between certain passions whose emotions do not differ.

Nonetheless, since emotion in the soul is the main thing found in each of our passions, it is much better to refer them all to the three basic passions in which these emotions are very different than to treat them in a disorderly and confused fashion in relation to the different perceptions we can have of an infinity of goods and evils causing them.

When the soul perceives some insignificant good within its reach, it might perhaps be said to hope for it, although it does not desire it; but here its hope is clearly not a passion but rather a simple judgment. For the emotion accompanying the idea of some good that we think we can possess makes hope into a true passion. Hope converted into confidence is still the same thing—it is a passion only on account of the emotion of joy involved with the emotion of desire, for the soul's judgment when it considers some good as certain is a passion only because foretaste of the good excites us. Finally, when hope diminishes and is replaced by despair, it is still clear that this despair is a passion only on account of the emotion of sadness mixed with the emotion of desire; for the soul's judgment when considering a good as beyond its reach is not a passion unless this judgment moves us.

But because the soul never views good or evil without some emotion and without some change taking place in the body, we often call the judgment producing passion the passion itself, because of the fact that when we perceive some good or evil we confuse what occurs in the body with what occurs in the soul. For the terms *hope, fear, boldness, shame, impudence, anger, mercy, raillery, regret,* and, in short, the terms for all the other passions are as ordinarily used, abbreviations for several terms by means of which we can give a detailed account of everything the passions contain.

By the word *passion* is meant the perception of a thing's relation to us, the soul's sensation and emotion, the disturbance in the brain and the motion in the spirits, a new sensation and a new emotion in the soul, and finally the agreeable sensation always accompanying the passions and making each of them pleasant—all these things are meant. But by the term for some passion we sometimes mean only the judgment causing it or merely the soul's emotion, or the motion of the spirits and blood alone, or finally some other thing accompanying the soul's emotion.

Knowledge of the truth is facilitated by abbreviating ideas and their expressions, but this is often a cause of error, especially when the ideas are abbreviated through common usage. For ideas should be abbreviated only when they have been made very clear and distinct by the mind's close application, and not, as is ordinarily done, by the passions and sensible things when made familiar to us through sensations and the mere influence of the imagination, which deceives the mind.

There is a great difference between the mind's pure ideas and the soul's sensations and emotions. The mind's pure ideas are clear and distinct, but it is difficult to make them familiar. The soul's sensations and emotions, on the other hand, are quite familiar, but it is impossible to know them clearly and distinctly. Extension, numbers, and their properties are known clearly; but unless they are made sensible by means of characters expressing them, it is difficult to represent them, for what is abstract does not affect us. The soul's sensations and emotions, on the other hand, are easily represented to the mind, although they are known only in an imperfect and confused way and all the terms exciting them strike the soul and catch its attention. As a result of this, we often fancy that we have understood discourse that is absolutely incomprehensible; and when we read descriptions of the soul's passions and sensations, we are convinced that we understand them perfectly because we are greatly affected by them and because the words striking our eyes agitate the soul. As soon as the words shame, despair, impudence, and so on, are said in front of us, a confused idea as well as an obscure sensation that occupies our attention, are called up; and because this sensation is familiar to us, and its representation does not require a great deal of effort by the mind, we are convinced that it is clear and distinct. Nonetheless, these words are terms for compound passions and therefore are abbreviated expressions that common usage has produced from several confused and obscure ideas.

Since we are obliged to use terms sanctioned by usage, it should not be surprising if obscurity and sometimes a kind of contradiction are to be encountered in what we say. And if you consider that the soul's emotions and sensations corresponding to the terms used in such discourse are not exactly alike in all men, on account of their different dispositions of mind, you will not be so quick to condemn when you disagree with us. I say this not so much as a hedge against possible objections as to demonstrate the nature of the passions as well as the value of treatises on this topic.

After all these precautions, I feel I can now say that all the passions can be related to the three basic ones, to wit, desire, joy, and sadness, and that mainly through the soul's various judgments about goods and evils do those that reduce to a single basic passion differ from one another.

I can say that hope and dreams as well as irresolution, which is a mean between them, are kinds of desire, that boldness, courage, competitiveness, and so on, are related more to desire and hope than to any other passion, and that fear, cowardice, jealousy, and so forth, are kinds of dread.

I might further add that cheerfulness and fame, kindness and gratitude, are kinds of joy caused by the perception of good within us or in those to whom we are related, as laughter or raillery is a kind of joy that is generally excited in us when we see those to whom we have no relation in dire straights; finally, that disgust, boredom, regret, mercy, and indignation are kinds of sadness caused by the perception of something we do not like.

But besides these and several other passions that I do not name[a] that specifically reduce to one of the basic passions, there are several others whose emotion is almost equally composed of either the passions of desire and joy (such as impudence, anger, and revenge) or from desire and sadness (such as shame, regret, and spite) or from all three together, when motives of joy and sadness are found together.

But although these latter passions have no specific name that I know of, they are nonetheless the most common, because in this life we almost never enjoy any good without some evil, and because we hardly ever suffer evil without the hope of being delivered from it and enjoying some good. Furthermore, although joy is completely contrary to sadness, it nonetheless does not exclude it, and it even shares with this passion the soul's capacity for willing when the perception of good and evil shares the soul's capacity for perceiving.

All the passions, then, are species of desire, joy, and sadness. And the main difference found among passions of the same species is due to the different perceptions or different judgments that cause or accompany them. As a result, to know the passions and to enumerate them as exactly as possible, it is necessary to investigate the different judgments we can make about goods and evils. But since we are here looking principally for the causes of our errors, we need not pause to examine so much the judgments preceding and causing the passions as those that follow them and that the soul forms about objects when excited by some passion, for these latter judgments are most liable to error.

The judgments preceding and causing the passions are almost always false to some extent, for they almost always are based on the soul's perception insofar as it considers objects in relation to itself and not as they are in themselves. But judgments following the passions are false in every way, for the judgments formed by the passions alone are based solely on the soul's perceptions of objects in relation to itself, or rather in relation to its present emotion.

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[a] There are more passions than terms to express them.

Judgments preceding the passions contain both the true and the false; but when the soul is agitated and its judgment is inspired by passion, the true disappears and the false remains to serve as a premise for false conclusions whose number varies with the magnitude of the passion.

The passions all seek their own justification; they unceasingly represent to the soul the object agitating it in the way most likely to maintain and increase its agitation. The judgment or the perception causing the agitation is strengthened to the extent that the passion increases, and the passion increases to the extent that the judgment producing it is in turn strengthened. False judgments and the passions unceasingly contribute to each other's preservation. As a result of this, if the heart did not cease supplying the spirits necessary for maintaining the appropriate traces in the brain and the rapid flow of these same spirits (which is necessary to preserve the soul's sensation and emotion accompanying the passions), the passions would continue to increase and we would never recognize our errors. But since all our passions depend on the fermentation and circulation of the blood, and since the heart is not always able to supply spirits suited to their preservation, they must cease when the spirits diminish and the blood cools.

Although it is a simple matter to discover the ordinary judgments of passions, still we must not neglect to do so. Few subjects are more deserving of the attention of those seeking the truth, attempting to deliver themselves from the tyranny of their bodies, or wishing to judge all things on the basis of true ideas.

Instruction might be had in two ways: either by means of pure reason or through the inner sensation we have of ourselves when we are moved by some passion. For example, we know from our own experience that we are led to form an ill opinion of those whom we do not like and to view them in a light colored by the animus of our passion. Through pure reason we also know that as we can hate only what is evil, the preservation of hatred demands that the mind represent its object in the worst possible light. For, in short, in order to infer immediately which judgments are those that the passions make us form, it is enough for us to suppose that all the passions seek their own justification and that they distract the imagination and then the mind in such a way as to preserve their own emotion.

Those of an active and vivid imagination and those extremely sensitive and liable to the impulse of the passions can see these things for themselves perfectly well from their sensation of what takes place in them; and they even speak of them in a way that is more pleasant and sometimes more instructive than do those who have more reason than imagination. For it should not be thought that those who best examine self-love and whose penetration into the inner recesses of the human heart is deepest are always the most enlightened. Often this is only a sign that they are livelier, more imaginative, and sometimes more malicious and corrupt than others.

But as for those who without consulting their inner sensation employ only their reason in seeking the nature of the passions as well as their possible consequences, if they are not always as penetrating as other people, they are always more rational and less liable to error, for these people judge things as they are in themselves. They see roughly what men in passion are capable of doing, depending on how much they are moved by passion, and they do not rashly judge what others will do or fail to do in certain instances by what they themselves would do, for they know that not all men are equally sensitive to the same objects or equally susceptible to involuntary emotions. Thus, not by consulting the sensations excited in us by the passions, but by consulting reason must we describe the judgments accompanying the passions, lest we make ourselves rather than the general nature of the passions known.

BOOK FIVE

Chapter Eleven

That all the passions seek their own justification; the judgments they cause us to make to justify them.

No elaborate argument is needed to demonstrate that all the passions seek their own justification. This principle is clear enough from the inner sensation we have of ourselves and from the conduct of those whom we see moved by some passion—all we need to do is present the principle so that it may be reflected on. The mind is so enslaved to the imagination that it never fails to obey an excited imagination. It does not dare question an impassioned imagination because its resistance is met with ill treatment and because it is always rewarded with pleasure when it gives way to the imagination. Even those whose imagination is so disordered that they think they have been transformed into beasts find reasons to prove that they ought to live as beasts, that they ought to walk on all fours, feed on grass, and imitate animal behavior. They find pleasure in living according to the impressions of their passion and feel inwardly punished when they resist them. This is enough to make reason, which is ordinarily the instrument of pleasure, function in such a way as to defend the cause of it.

If it is true, then, that the passions do seek their own justification, then clearly desire must of itself lead us to judge well of its object if it is an attractive desire, or to judge ill of it if it is an averse desire. Attractive desire is an impulse of the soul excited by the spirits, which disposes the soul toward willing to possess or use things not under its power, for we desire to maintain our possession of something only because the future is not under our power. The justification of desire, therefore, requires that the object inspiring it be judged good either in itself or in relation to some other good we love, and the opposite must be thought of that desire which is a kind of aversion.

It is true that there must be some basis for our judgment of something as good or evil, but every object of our passions is good in a sense. If some of them might be said to contain nothing good and consequently to be incapable of being perceived as good by the mind, still they cannot be said to be incapable of being enjoyed as good, on the assumption that they move us, and this sensation is only too sufficient to lead the soul to judge well of an object.

If we easily judge that fire contains in itself the heat we feel, and bread the flavor we taste, due to the sensation these bodies excite in us—although this is utterly incomprehensible to the mind, which cannot conceive how heat and flavor should be corporeal modes—there is no object of our passions, no matter how vile or despicable it might appear, that we shall fail to judge as good when we feel pleasure in its possession. For as we imagine that heat is emitted by fire, so we blindly believe that the objects of our passions cause the pleasure we enjoy when we possess them and that thus they are good, since they are capable of producing good for us. The same should be said of the passions that have evil as their object.

But as I have just said, everything is worthy either of love or aversion, either in itself or through something to which it is related; and when we are moved by some passion, we quickly discover in its object the good or evil that nourishes it. Thus, reason easily shows which judgments might be those that our present passions form in us.

For if we are moved by an attractive desire, clearly it will not fail to justify itself through the favorable judgments it forms of its object. You will easily see that these judgments will vary to the extent that the desire is violent, and that often they will be final and absolute although only a very small part of the thing appears good. You will have no difficulty in understanding how these favorable judgments extend to all things that have, or that appear to have, some connection with the main object of the passion in proportion to the strength of the passion and the scope of the imagination. But if the desire is averse, just the opposite will happen, for reasons that are equally easy to understand. Experience affords a sufficient demonstration of these things, and in this it is in perfect agreement with reason. But let us illustrate these truths with several examples.

All men naturally desire to know, for all minds are created for the truth; but the desire to know, as perfectly correct and rational as it is in itself, often becomes a very dangerous vice through the false judgments that accompany it. Curiosity often tempts the mind with vain objects for its meditations and often attaches to these ideas false ideas of greatness; it enhances them with the deceptive luster of rarity and represents them so attractively that we have difficulty contemplating them without excessive pleasure and attachment.

Some people are taken by almost every trifle, and their occupation is always justified by the false judgments their vain curiosity leads them to make. For example, those who are very interested in words imagine that all the sciences are bound up in the knowledge of certain terms. They find a thousand reasons to be convinced of this, and the respect paid them by those confused by an unknown term is in no way the least significant though it is the least reasonable of them.

There are certain people who spend their whole lives learning to speak but who perhaps ought to spend their whole lives in silence, for clearly we ought to be quiet when we have nothing worthwhile to say; but they, of course, do not learn to speak only to remain quiet. They do not know enough to know that in order to speak well one must think well, i.e., one must perfect the mind and one must distinguish the true from the false, clear ideas from obscure ones, and what springs from the mind from what comes from the imagination. They fancy themselves rare wits because they can please the ear with a pleasant harmony, flatter the passions by pleasant gestures, entertain the imagination with expressive phrases, although they leave the mind devoid of ideas and without enlightenment or understanding.

There is some reason, it would seem, to spend one's whole life studying one's language since we use it all our life, and this might justify certain people's passion. But my view is that it is difficult to justify with any plausibility the passion of those who devote themselves to all sorts of languages. We might excuse the passion of those who build an entire library of all kinds of dictionaries as well as the curiosity of those who collect coins from all countries and periods; in certain instances that sort of thing might be useful to them, and if it does not do them a great deal of good, at least it does not do them any harm. This storehouse of curiosities of theirs does not encumber them, for they do not carry their books or their medallions around with them. But how can we justify the passion of those who turn their head into a library of dictionaries. They lose track of their affairs and essential duties for the sake of useless words. They speak their own language only haltingly. Their conversation is constantly mixed with unknown or barbarous terms, and they never pay honest folk with the proper currency. In short, their reason functions no better than their tongue, for all the nooks and crannies of their memory are so full of word derivations that their mind is stifled, as it were, by the flurry of words constantly flying about it.

Still the strange desire of these philologists must seek its own justification. But how? Listen to the judgements of these falsely learned about languages and you will see. Or assume certain of the axioms that they take to be incontestable and draw whatever consequences you can from them. Assume, for example, that men who speak several languages are as many different men as the languages they speak, since it is speech that distinguishes them from beasts. Or assume that since ancient philosophers and foreigners are more learned than we, our ignorance of languages is the cause of our ignorance in an infinity of things. Assume these and other such premises, draw your conclusions, and you will form the judgments that inspire passion for languages, and that consequently are like those that the same passion forms in philologists in an attempt to justify their studies. Even the basest and most contemptible sciences have something about them that lights the imagination and easily dazzles the mind through the effulgence of the passion attached to it. True, this effulgence diminishes when the spirits in the blood cool and the light of truth begins to dawn, but this light also begins to disappear when the imagination is rekindled and we can no longer clearly make out the reasons for suppressing our passion.

Furthermore, when the passion animating us feels itself dying out, it does not repent of its behavior. Rather, it might be said to dispose all things either to die with honor or to be revived soon after, i.e., it always disposes the mind to form judgments that justify it. While still in this state it forms a kind of alliance with all the other passions that might come to its rescue, provide it with spirits and blood, rekindle its ashes, and give it a new birth. For the passions are in no way indifferent to one another. All those that can exist together faithfully contribute to each other's preservation. Thus, the judgments that justify one's thirst for languages, or for whatever else you may wish, are always cared for and reinforced by all the passions that are not contrary to this desire.

The man of false learning imagines himself at one moment as surrounded by respectful listeners, at the next as having conquered those whom he has overwhelmed with incomprehensible words, and almost always as superior to the common man. He is flattered by their praises and attention. He thinks himself a man for all times and places; he does not restrict himself like lesser minds to the present time and to his own city but, much to his own pleasure, he devours all. How many passions are mixed with this passion for false learning, and how they all strive to justify it and warmly solicit judgments in its favor!

If each passion acted only in its own behalf without caring about any others, they would all disappear soon after their birth. They could not form enough false judgments in order to subsist, nor could they long support the imagination against the light of reason. But everything about the passions is arranged in the most appropriate way possible for their mutual preservation. They strengthen one another, and even the most remote are of help; and they need only fall short of being open enemies to cooperate in following the rules of a well-ordered society.

If the passion of desire stood alone, all its judgments would only tend to represent the good as attainable, for attractive desire as such is produced only through the judgment that some good is attainable. Thus, this desire can form judgments only about attainability, since judgments following and preserving the passion are exactly like those preceding and causing them. But desire is animated by love, strengthened by hope, increased by joy, renewed by dread, accompanied by courage, envy, anger, and several other passions that in turn form an infinite variety of judgments that succeed one another and sustain the desire giving birth to them. We should not be surprised, therefore, if the desire for some utter trifle or for something that is clearly useless or harmful to us constantly attempts to justify itself against reason for years or even for the entire life of a man moved by it, since there are so many passions working for its justification. Here in a few words is how the passions seek this justification, for these things must be explained with clear ideas.

Every passion agitates both the blood and the spirits. These agitated spirits are conducted into the brain by the sensible perception of the object or by the force of the imagination in such a way as to form deep traces representing this object. They bend and sometimes even break the brain's fibers because of their tempestuous flow, leaving the imagination tarnished and corrupt for some time; for injuries to the brain are not easily healed nor are its traces smoothed over, because the flow of the spirits there is continuous. The brain's traces do not obey the soul nor are they eradicated at its command; rather, they resist it and even force it to consider objects in such a way as to agitate and disturb it on behalf of the passions. The passions, then, act on the imagination, and the imagination thus corrupted combats reason by continually representing things to it not as they are in themselves, so that the mind might issue a true judgment, but as they are in relation to the present passion, so that the mind might be led into a favorable judgment of it.

The passions corrupt not only the imagination and the mind in their favor, but they also produce in the rest of the body all the dispositions necessary for their preservation. The spirits they agitate do not stop in the brain but continue, as I have said elsewhere, into all the other parts of the body. They are distributed mainly in the heart, the liver, the spleen, and the nerves surrounding the main arteries. Finally, they pour into whatever parts can supply the spirits necessary for the preservation of the dominant passion. But as these spirits spread out into all the parts of the body, they gradually destroy everything capable of withstanding their flow. They thereby construct such a smooth and rapid path that the slightest object agitates us infinitely and, as a result, leads us to form judgments favorable to the passions. In this way they establish and justify themselves.

If you consider the construction of the brain's fibers as well as the agitation and amount of spirits and blood in the different sexes and ages, you will not have much difficulty in seeing roughly what passions certain people are liable to and, as a result, what judgments they form of objects. To give an example of this, I might point out that from the amount of spirits noted in different people we can roughly determine that if the same thing be similarly proposed and explained to them, several will form judgments of hope and joy concerning it, whereas others will form judgments of dread and sadness.

For since those who have a greater amount of blood and spirits—generally young people, as well as those who are either sanguine or choleric—are generally optimistic due to the secret sensation they have of their strength, which is actually a matter of their abundance of animal spirits, they think they will encounter no opposition to their intentions that they will be unable to overcome. They first draw strength from the foretaste of the good they hope to possess, and they form all sorts of judgments in justification of their hope and joy. But since those who have a paucity of agitated spirits, such as old folk, the melancholic, and the phlegmatic, are given to dread and sadness, (because their soul feels weak due to the lack of spirits to carry out its commands) they form just the opposite judgments. They imagine insurmountable difficulties to justify their dread, and they give way to envy, sadness, despair, and to those kinds of aversion to which the weak are most susceptible.

BOOK FIVE

Chapter Twelve

That the passions that have evil as their object are the most dangerous and wrong, and that those that are least accompanied by knowledge are the most vivid and sensible.

Of all the passions, the various kinds of aversion are those whose judgments are furthest from reason and most to be feared. No passion corrupts reason more in its favor than hatred and dread, and especially hatred in the choleric or in those whose spirits are in a constant state of agitation, and dread in the melancholic or in those whose gross and dense spirits are neither agitated nor quieted very easily. But when hatred and dread conspire to corrupt reason, as they often do, we cannot form a judgment so wrong or so strange that we would not defend it with insurmountable obstinacy.

The reason for this is that the evils in this life affect the soul more than do its goods. The sensation of pain is more vivid than the sensation of pleasure; injuries and insults are felt much more than praise and acclaim; and though you might find people who are indifferent as to whether they enjoy certain pleasures or receive certain honors, you will have difficulty finding people who suffer pain and scorn in tranquility.

Thus, hatred, dread, and other kinds of aversion that have evil as their object, are very violent passions. They give the mind unexpected shocks, dazing it and disturbing it; they quickly penetrate to the soul's innermost recesses, and, overthrowing reason, they issue erroneous and iniquitous judgments on all sorts of subjects in order to further their own folly and tyranny.

Of all the passions, these are the cruelest and the most suspect, the most opposed to charity and civil society, and at the same time the most ridiculous and most extravagant, for they form such absurd and incongruous judgments that they provoke the indignant laughter of everyone.

These are the passions that animated the wild utterances of the Pharisees. "What are we to do? This man has worked many miracles. If we let him continue, everyone will believe in him. The Romans will come and destroy our city and nation."[a] They all finally agreed that Jesus Christ worked many

[a] John 11:47 [–48].

miracles—the raising of Lazarus was beyond question. Yet what was the judgment of their passions? To kill Jesus Christ and even Lazarus, whom He had raised from the dead. And they killed Jesus Christ because "if we let Him continue, everyone will believe in Him, the Romans will come and destroy our city and nation." And why wish to kill Lazarus? "Because many Jews were leaving them to follow Jesus on account of him."[a] Judgments at once both cruel and extravagant—cruel through hatred and extravagant through fear: "the Romans will come and destroy our city and nation."

These same passions made them speak as follows in front of Annas, the high priest, Caiaphas, John, Alexander, and the rest of the priestly class: "What shall we do to these people, for they have performed a miracle which is known to the whole city and which we cannot deny. But to prevent it from spreading further among the people, let us threaten to punish them if they continue to teach in the name of Jesus."[b]

All these great men issued judgments that were at once both wrong and absurd because they were moved by passion and blinded by their false zeal. They did not dare punish the Apostles because of the people and because the man who had been miraculously healed was over forty years old and was present in the assembly; but they threatened them to prevent them from teaching in the name of Jesus. They believed that they could condemn a teaching by killing its author. "You will try," they said to the Apostles, "to have this man's blood upon us."[c]

When false zeal joins with hatred, it conceals hatred from the reproaches of reason and justifies it in such a way that we even feel scruples about not following its impulses. And when ignorance and weakness accompany dread, they extend dread to an infinity of subjects and so increase its emotions that reason is alarmed and troubled by the least suspicion.

Those moved by false zeal believe they are serving God when they obey their passions. They blindly follow the secret urges of their hatred as if inwardly inspired by the truth. Since they gleefully accept justifications of their excessive conduct on the basis of sensation, they are confirmed in their errors with an insurmountable obstinancy.

As for weak and ignorant minds, they are subject to ridiculous and imaginary fears. They are like children walking alone in the dark without a candle; they imagine horrible demons and are troubled and cry out as though all were lost. Illumination might help the ignorant, but as for weak minds, their imagination will always remain in its infirm state. The least thing related to what frightened them renews the traces and the flow of spirits that cause the symptoms of their fear, so that it is absolutely impossible to cure them or to quiet them for very long.

But when false zeal combines with hatred and dread in a weak mind, it produces in this mind a stream of judgments of unthinkably horrible violence and injustice. To help a mind possessed by these passions requires a miracle greater than the conversion of Saint Paul, and, in fact, would be absolutely impossible unless the power and mercy of God were limitless.

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[a] John 12:11.

[b] Acts 4 [16–17].

[c] Acts 5 [28].

Those walking in darkness rejoice at the sight of light, but someone possessed by these passions cannot endure it. Light hurts him because it resists his passion. Since his dread is to a certain extent voluntary because his hatred produces it, he enjoys being struck by it because we enjoy being moved even by those passions that have evil as their object, provided that the evil is imaginary or, rather, provided that we know, as in plays, that the evil cannot hurt us.

The phantoms imagined by those walking in darkness vanish at the approach of a candle; but the other's phantoms do not disappear in the light of truth. Only with difficulty does the truth pierce the shadows of his mind, and it does nothing but irritate his imagination. As a result of this, since he concentrates solely on the object of his passion, the light is reflected, and these phantoms seem to have a real body because they reflect a few weak rays of the light striking them.

But even if we were to suppose these minds to be docile and reflective enough to listen to and understand arguments that might clear up their errors, no matter how well founded these arguments might be in themselves they would not be able to halt the impetuous impulse of these passions for very long, or to prevent them from soon justifying themselves through very persuasive and sensible proofs, because their imagination is disordered by dread and their heart corrupted by hatred and false zeal.

It should be noted that some passions appear but once, and that there are other persistent ones that subsist for a long while. Those do not last that are not sustained by the mind's perception or by some plausible reason, but that are only produced and strengthened by the sensible perception of some object and the fermentation of the blood; they generally die immediately after their birth. But those accompanied by the mind's perception are constant; for the principle that produces them is not liable to change as are the blood and humors. As a result, hatred, dread, and all the other passions that are excited or preserved in us by the mind's knowledge, and not by the sensible perception of some evil, must subsist for a long while. These passions, therefore, are the most lasting, the most violent and the most unjust. But they are not the most vivid and the most sensible, as we shall soon show.

The perception of good and evil that excites the passions occurs in three ways: through the senses, through the imagination, and through the mind. The perception of good and evil through the senses, or the sensation of good and evil, produces very quick and sensible passions. The perception of good and evil through the imagination alone excites much weaker passions. The perception of good and evil through the mind alone produces real passions only to the extent that the mind's perception of good and evil is always accompanied by some motion in the animal spirits.

The passions were given to us only for the good of the body and to unite us through the body to all sensible objects, for although sensible things can be neither good nor evil with regard to the mind, they are nevertheless good or evil in relation to the body to which the mind is joined. Thus, since the senses and imagination are much better than the mind alone at revealing the relations that sensible objects have with the body, these faculties excite much livelier passions than does clear and certain knowledge or awareness. But because our awarenesses are always accompanied by some motion in the spirits, a clear and evident awareness of some great good or evil that the senses have not discovered always excites some secret passion.

Nevertheless, not all our clear and evident knowledge of good or evil is followed by some sensible passion that we are aware of, just as not all our passions are accompanied by some awareness on the mind's part. For although we sometimes think about goods or evils without feeling moved, we often feel moved by some passion without knowing it and sometimes even without feeling its cause. A man who inhales a healthy draught of air feels moved by joy without knowing the cause of it; he does not know the good he possesses that produces this joy. And if there is some invisible body mixed in with his blood and preventing its fermentation, he will feel sad and might even attribute the cause of his sadness to some object visible before him while he experiences this passion.

Of all the passions none is quicker or more sensible and, as a result, less accompanied by the mind's awareness than are horror and antipathy, approval and sympathy. If a fly annoys him or a leaf tickles him, a man sleeping in the shade often awakens with a start as if a snake were biting him. The confused sensation of something as terrible as death itself frightens him, and without so much as a thought he is moved by a very strong, violent passion, i.e., by desiderative aversion. A man in want, on the other hand, by chance discovers some small good whose delight surprises him; he attaches himself to this trifle as if to the greatest of all goods without the least reflection. This also happens with impulses of sympathy and antipathy. We see someone in a group whose appearance and behavior have secret alliances with the present disposition of our body; the sight of this person affects and penetrates us. We are led unreflectingly to love him, and we wish him well. Here an I-know-not-what moves us, for reason has no role in it. Just the opposite happens with regard to those whose appearance and behavior spread, as it were, disgust and horror. There is something insipid about them, I know not what, that repels and horrifies; but the mind knows nothing of it, for only the senses judge competently of sensible beauty and ugliness, which are the objects of these sorts of passions.

BOOK SIX: METHOD

PART ONE

Chapter One

The plan of this book. The two general ways of preserving evidence in the search after truth, which will be the main topic of this book.

We have seen in the preceding books that the mind of man is extremely liable to error, that the illusions of his senses,[a] the visions of his imagination,[b] and the abstractions of his mind[c] all continually deceive him; we have seen that the inclinations[d] of his will and the passions of his heart[e] almost always conceal the truth from him and actually let it filter through to him only when tinged by the false colors that flatter concupiscence. In short, we have seen some of the mind's errors as well as their causes. Now is the time to indicate the paths leading to knowledge of the truth and to equip the mind with as much strength and skill as we can, so that it might follow these paths without straying or needlessly tiring.

But to spare the reader from wasted effort, I feel that I must warn that this book is intended only for those genuinely willing to seek the truth by themselves and to use the proper capacities of their mind to do so. I ask that they temporarily reject all probable opinions; that they ignore even the strongest of conjectures as well as the authority of all philosophers; that they free themselves as much as possible from any cares, special interest, or passion; that they place no trust in their senses and imagination—in a word, that they bear in mind most of what was said in the preceding books.

The aim of this final book is to render the mind as perfect as it can naturally be, by supplying the help necessary to extend its scope and make it more attentive and by laying down the rules that it must observe in the search after truth in order never to err, while in time learning all that it possibly can.

Were I to fulfill this aim perfectly, which I do not pretend to do since this is but an attempt thereat, I could be said to have produced a universal science; and

[a] Bk. 1.

[b] Bk. 2.

[c] Bk. 3.

[d] Bk. 4.

[e] Bk. 5.

those able to use it would be truly called learned, since they would have the foundation of all the particular sciences, which they would then acquire to the extent to which they used this universal science. For in this treatise I have tried to enable the mind to form true and certain judgments on all questions suited to it.

As memorizing all the demonstrations of Euclid, Pappus, Archimedes, Apollonius, and all those who have written on the subject is not enough to make one a good geometer, so it is not enough to be a learned philosopher to have read Plato, Aristotle, and Descartes, and to have memorized their views on philosophical questions. The knowledge of all the views and judgments of other men, be they philosophers or geometers, is not so much a science as a history; for the true science that alone can render the human mind as perfect as it now can be consists in a capacity for judging on a firm foundation all things within its scope. But in order not to waste time or burden anybody with hasty judgments, let us begin our treatment of this very important matter.

First and foremost, the rule we established and proved at the outset of the first book must be remembered, for it is the foundation and first principle of everything we said thereafter. To repeat that rule: *We must give full consent only to those propositions that appear so evidently true that we cannot withhold our consent without feeling inner pain and the secret reproaches of reason, i.e., without our knowing clearly that we would make ill use of our freedom were we to withhold our consent.* Each time we give our consent to probabilities, we clearly run the risk of being deceived; and, in fact, we are deceived almost every time, or, if we are not deceived, it is only through good fortune. Thus, the confused perception of a great number of probabilities on a number of different subjects in no way makes our reason more perfect, and only the clear perception of truth can give it any real satisfaction or perfection.

Since, according to our first rule, only evidence assures us that we are not being deceived, it is easy to conclude that we must above all take care to preserve this evidence in all our perceptions, so that we might form well-founded judgments in everything given to our reason and discover all the truths we can.

There are two sorts of things that can produce and preserve this evidence. The first sort is in us, or to a certain extent depends on us; the second is completely independent of us. For just as in order to see visible objects distinctly we must have good vision and actually look at the objects, two things that are in us or that depend to some extent on us, so we must have a good mind and apply it well to reach the bottom of intelligible truths, two things that are also in us or that depend on us to some extent.

But as the eyes need light to see and as this light depends on external causes, so the mind needs ideas in order to understand; and these ideas, as we have proved elsewhere, do not depend on us but on an external cause that, nonetheless, provides us with them as a result of our attention. If it should happen, then, that these ideas were not present to our mind each time we wished to have them, or if He who illuminates the world willed to conceal them from us, there would be nothing we could do about it and we would know nothing—just as we cannot see visible objects when there is no light. But we have no cause for fear, for since the presence of ideas to our mind is natural and depends on the general will of God, which is always firm and immutable, we shall always have ideas to discover things that are naturally subjects for reason. For the Sun that illuminates minds is not like the sun that illuminates bodies; it is never eclipsed, and it penetrates everything without losing its strength.

Since, then, the ideas of all things are continually present to us while we are not attentively considering them, all we have to do to preserve evidence in all our perceptions is to look for ways to make our mind more attentive and to extend its scope, just as to clearly distinguish visible objects in our vicinity all we need is good vision and the proper attention.

But because the objects we are considering often have more relations than we can discover with a single perception on the part of the mind, we also need rules which enable us to unravel every difficulty so well that with this help the mind will be more attentive and of greater scope, and we shall be able to discover with complete evidence all the relations of the things we examine.

We shall, therefore, divide this sixth book into two parts. In the first we shall discuss the aids of which the mind might avail itself in order to become more attentive and to extend its scope, and in the second we shall give the rules that must be followed in seeking truths in order to form well-founded judgments without fear of error.

BOOK SIX: PART ONE

Chapter Two

That attention is needed to preserve evidence in our knowledge. That the soul's sensible modifications make it attentive, but take too great a share of its capacity for perceiving.

Right at the outset of this work we showed that the understanding does nothing but perceive, and that as far as it is concerned, there is no difference between simple perceptions, judgments, and inferences—unless it is that judgments and inferences are much more complex than simple perceptions because they represent not only things but even the relations that things have among themselves. For simple perceptions represent to the mind only things; but judgments represent to the mind the relations between things, and inferences represent the relations between relations of things if they are simple inferences, or the relations of relations, or the complex relations between the relations of things, *ad infinitum,* if they are complex inferences. To the extent that these relations are multiplied, the inferences representing them to the mind become more complex. Nevertheless, judgments and inferences, both simple and complex, are but pure perceptions on the part of the understanding, because all the understanding does is perceive, as we have already said right at the outset of the first book.

Since judgments and inferences are but pure perceptions as far as the understanding is concerned, it is clear that the understanding never falls into error, since error is not found in perception and is not even intelligible. For in the final analysis, error or falsehood is but a relation that does not exist, and what does not exist is neither perceptible nor intelligible. We can perceive that two times two is four, or that two times two is not five, because there is actually a relation of equality between two times two and four, and a relation of inequality between two times two and five; and so truth is intelligible. But we shall never perceive that two times two is five, for here there is no relation of equality, and what does not exist cannot be perceived. As we have already said several times, error consists only in hasty consent of the will, which allows itself to be dazzled by some false light and which, instead of preserving its freedom as much as it can, carelessly relies on the appearance of truth.

Yet, because it often happens that the understanding has only confused and imperfect perceptions of things, it is truly a cause of our errors that might be called occasional or indirect. For just as physical perception often casts us into error because it represents external objects in a confused and imperfect way (in a confused way when the objects are too far away from us or poorly lighted, and in an imperfect way because it represents to us only their sides facing us), so the understanding, which often has only a confused and imperfect perception of things because they are not sufficiently present to it and because it fails to discover all their parts, causes the will to fall into a great number of errors by yielding too easily to these obscure and imperfect perceptions.

It is therefore necessary to look for means to keep our perceptions from being confused and imperfect. And because, as everyone knows, there is nothing that makes them clearer and more distinct than attentiveness, we must try to find the means to become more attentive than we are. In this way we shall preserve evidence in our inferences and see at a glance a necessary connection between all the parts of our longest deductions.

In order to find these means, we must be thoroughly convinced of what we have said elsewhere, that the mind does not pay equal attention to everything it perceives. For it applies itself infinitely more to those things that affect it, that modify it, and that penetrate it, than to those that are present to it but that do not affect it and do not belong to it. In a word, it is much more occupied with its own modifications than with simple ideas of objects, which ideas are something other than itself.

This is why we consider the abstract ideas of pure understanding only with distaste and without a great deal of application, and why we apply ourselves much more to objects of imagination, especially if our imagination is lively and forms deep traces in our brain. Finally, this is also why we are entirely occupied with sensible qualities, without even being able to attend to the pure ideas of the mind, when we sense something that is very pleasant or very painful. For since pain, pleasure and the other sensations are only modes of the mind, we cannot fail to perceive them, nor can our mind's capacity fail to be filled by them, since all our sensations are nothing but perceptions.

But this is not true of the mind's pure ideas; we can have them intimately joined to our mind without paying them the least bit of attention. For although God is very closely joined to us, and although the ideas of everything we see are found in Him, yet these ideas, although right in our midst, are hidden from us when the motion of the spirits does not arouse traces or when our will does not apply our mind to them, i.e., when it does not bring about the acts to which the Author of nature has attached the representation of these ideas. These things are the basis for all of what we are going to say concerning the assistance that can be given to make the mind more attentive. This assistance will thus be based on the very nature of the mind, and there is some reason to hope that it will not be useless or chimerical, like many other such aids that are more of a hindrance than a help. But though it might not be as helpful as we might wish, you will not completely waste your time in reading what I shall say of this assistance, since it will at least provide you with a better understanding of your own mind.

The soul's modifications have three causes: the senses, the imagination, and the passions. Everyone knows from his own experience that instances of pleasure and pain and generally all the sensations of a rather strong nature, lively imaginings, and the stronger passions, so occupy the mind that it is incapable of attentiveness while these things are affecting it because its capacity or faculty of perceiving is then entirely exhausted by them. But even if these modifications were moderate, they would still divide the mind's capacity to some extent, as a result of which the mind would be unable to give itself entirely to the consideration of truths at all abstract.

We must therefore draw this important conclusion: that all those who seriously wish to apply themselves to the search after truth must be careful to avoid as best they can all sensations that are too strong, such as loud noise, strong light, pleasure, pain, and so on; they must continuously guard the purity of their imagination and prevent deep traces, which continually disturb and dissipate the mind, from being formed in their brain. Finally, they must above all halt the impulses of the passions that form impressions in the body and soul so powerful that it is ordinarily next to impossible for the mind to think about anything but the objects exciting these impulses. For though the pure ideas of truth are always present to us, we are unable to consider them when our capacity for thought is filled by these modifications that so affect us.

Nonetheless, as the soul cannot be without passions, sensation, or some other particular modification, we must make a virtue of necessity and draw even from these modifications assistance in making ourselves more attentive. But much skill and care is required in the use of these aids if they are to be of any help. Our need for them must be carefully examined, and we must use them only to the extent to which we are forced to do so by the necessity for becoming more attentive.

BOOK SIX: PART ONE

Chapter Three

The use that can be made of the passions and the senses for preserving the mind's attention.

The passions that can be used in moving us toward the search after truth are those that strengthen and encourage us to overcome the difficulty we find in making ourselves attentive. There are good passions and bad passions; there are good ones such as the desire to find truth, to be sufficiently enlightened so as to behave properly, to be helpful to one's neighbor, and so on; and there are evil or dangerous passions such as the desire for fame, for gaining a certain status, for rising above one's neighbors, and others even more inordinate that we need not mention.

In our unhappy state, it often happens that the least rational passions encourage us more to seek the truth and offer greater consolation in the difficulties involved therein than the more proper and more rational passions. Vanity, for example, agitates us a great deal more than love for truth, and we daily see people constantly studying when they know there are others to whom they can relate what they have learned, but who give up their studies altogether when there is no one to listen to them. The confused perception of the glory they will receive when they announce their views sustains their courage even during the driest and most uninteresting studies. But if, through circumstances dictated either by chance or by the necessities of life, they find themselves separated from their little flock of admirers, their ardor immediately cools; even the most worthwhile studies no longer have any attraction for them; disgust, boredom, and vexation overtake them, and they give up everything. Vanity triumphs over their natural sloth, but sloth, in turn, triumphs over their love for truth; for vanity sometimes stands up against sloth, but sloth is nearly always victorious over love of truth.

Yet, given that the passion for glory can be directed toward a good end (since it can be used for the glory of God as well as for the benefit of others and our own reputation), this passion might perhaps be used by certain people in certain instances as an aid to making their mind more attentive. But care must be taken to make use of it only when the rational passions of which we have just spoken are not enough, and when we are obliged by duty to apply ourselves to distasteful topics. First, because this passion is very dangerous to the conscience; second, because it imperceptibly involves us in evil studies that have more glamour than usefulness and truth; and finally, because it is very difficult to control, because we are often made fools by it, and because though we think we are enlightening our mind, we are perhaps only strengthening the concupiscence of pride, which not only corrupts the heart but also plunges the mind into such darkness as is morally impossible to illumine.

For you must realize that this passion is insensibly rooted, strengthened, and increased in the heart of man, and that when it is too violent, instead of helping the mind to pursue the truth, it greatly blinds it and even makes it believe that things are as it wishes them to be.

Undoubtedly there would not be so many false inventions and imaginary discoveries if men did not let themselves be overcome by their ardent desire to look like innovators. For the obstinate and steadfast belief on the part of several people that they have found, for example, perpetual motion, the way to square the circle and to duplicate the cube by ordinary geometry, is probably due to their great desire to seem to have done what others have failed to do.

It is more fitting, then, to be moved by those passions that are as useful in the search after truth as they are strong, and whose excess is less to be feared, such as the desire to use the mind well and to be delivered from prejudice and error, to be sufficiently enlightened to act properly in our present state, and other such passions that do not involve us in worthless studies or lead us into hasty judgments.

When we have begun to experience the pleasure found in using the mind, when we have seen the utility to be derived from it, and when we have freed ourselves from the greater passions and have become disgusted by the sensible pleasures that, when we indiscriminately give in to the passions, invariably dominate, or rather, tyrannize reason, we then need no passions other than those of which we have just spoken in order to rouse our attentiveness for subjects on which we wish to meditate.

But most men are not in this state; they have neither the taste, nor intelligence, nor fastidiousness for anything but what affects the senses. Their imagination is corrupted by an almost infinite number of deep traces, which arouse only false ideas, for they depend on everything falling under the senses and imagination, and always judge them according to the impression they receive from them, i.e., in relation to themselves. Pride, debauchery, plots, driving desire to make money, all so common among men of the world, obscure their perception of truth as well as stifle their sense of piety, because they separate them from God, who alone can enlighten us and govern us. For we cannot increase our union with sensible things without diminishing our union with intelligible truths, since we cannot at the same time be closely joined to such different and contrary things.

Those of pure and chaste imagination, i.e., those whose brain is not occupied by deep traces belonging to visible things, can easily unite themselves to God and make themselves attentive to the truth that speaks to them; they can forgo the assistance drawn from the passions. But those who are in the world at large, who are involved in so many things, and whose imagination is tarnished by the false and obscure ideas that sensible objects excite in them—they cannot apply themselves to the truth unless they are sustained by some passion strong enough to counterbalance the influence of the body and to form traces in their brain capable of causing revulsion in the animal spirits. But since the passions by themselves can only confuse ideas, they must not be used unless urgently required, and all men must study themselves in order to adjust their passions proportionately to their weaknesses.

There is no difficulty in finding the means to excite in ourselves whatever passions we wish. The information we have supplied in preceding books concerning the union of soul and body is a sufficient basis for this; for in a word, it is enough to think attentively about the objects that according to nature's institution are capable of exciting the passions. Thus, we can almost always generate in our heart the passions we need. But though we can almost always generate them, we cannot always extinguish them, nor remedy the disorders they have caused in the imagination. We must use them, therefore, in great moderation.

Above all, care must be taken not to judge things by passion, but only by the clear perception of truth, which is almost impossible to do when the passions are at all lively. Passion should be used only to awaken our attention; but it always produces its own ideas, and it drives the will to judge things by these ideas that affect it, rather than by the pure and abstract ideas of truth, which do not affect it. As a result of this, we often form judgments that last only as long as passion does, because the circulation of blood, and not the clear perception of immutable truth, causes them to be formed.

True, men are extremely obstinate in their errors, and they hold to them most of their lives. But this is because these errors often have causes other than the passions, or else because they depend on certain long-lived passions that spring from the construction of the body, self-interest, or some other enduring cause. Self-interest, for example, which is always present, produces a passion that never passes away, and the judgments that this passion causes to be formed last just as long. But all of men's other sensations that depend on particular passions are as unstable as the fermentation of their humors. Now they say one thing, then another, and what they say often enough agrees with what they think. Since they jump from one false good to another according to the impuse of their passion, and again have their pleasure changed when the impluse ceases, they run from one false system to another. They fervently embrace some false view as long as passion makes it seem plausible; but they give it up immediately after the passion is extinguished. Through the passions they experience all goods without finding anything good, they see all truths without seeing anything true, though while their passion lasts, what they experience and see seem to be the sovereign good and the indisputable truth.

The second possible source of aid in making the mind attentive is the senses. Sensations are the natural modifications of the soul and differ from the mind's pure ideas; sensations awaken our attention much more quickly than pure ideas. From this it is clear that the mind's lack of attention to truths that do not affect it can be remedied by expressing them by sensible things that do affect it.

This is why geometers use sensible lines to express the proportions between the magnitudes they wish to consider. In tracing these lines on paper, they trace, so to speak, the ideas corresponding to them in their mind, and make them more familiar by sensing them at the same time they conceive them. In this way we can teach many rather difficult things to children, who are incapable of abstract truths due to the delicacy of their brain's fibers. With their eyes they see only colors, pictures, and images, but with their mind they consider the ideas corresponding to these sensible objects.

Above all, care must be taken not to invest the objects we wish to consider or to demonstrate to others with so much *sensibility* that the mind is more occupied with it than with the truth itself, for this is one of the gravest as well as the most common of mistakes. We see people every day who apply themselves only to what affects the senses and who express themselves in a way so sensible that the truth is, as it were, stifled under the weight of the vain ornamentation of their false eloquence. Consequently, since those who listen to them are more affected by the cadence of their speech and by their facial expressions than by the arguments they hear, they let themselves be persuaded without knowing why or even of what they are persuaded.

Care must be taken, therefore, to moderate the sensibility of our expressions in such a way as only to make the mind more attentive. Nothing is as beautiful as the truth, and we must not pretend to be able to make it more beautiful by painting it with sensible colors that are impermanent and have but passing charm. We might give it a certain delicacy, but that would diminish its strength. It should not be dressed in so much pomp and brilliance that the mind dwells more on its embellishments than on it, for this would be to treat the truth like certain people who are so laden with gold and precious stones that they appear the least part of the whole they make up together with their accoutrements. The truth should be clothed as the magistrates of Venice, who are obliged to wear an utterly simple cap and gown that only distinguishes them from ordinary men, so that men may look at their faces with attention and respect without dwelling on their apparel. Finally, care must be taken not to surround the truth with too many pleasant things, which dissipate the mind and prevent it from recognizing the truth, lest we should give to anything else the honors that belong to it, as often happens to princes who cannot be distinguished from the great number of court people surrounding them and assuming the air of greatness and majesty that belongs only to sovereigns.

But to give a better example, we must show the truth to others as the truth showed itself. Because men's perception since the time of their first father's sin has been too weak to consider the truth in itself, this sovereign truth has made itself sensible by investing itself with our humanity in order to attract our attention, to enlighten us, and to make itself worthy of love to our eyes. Following this example, we can invest the truths we wish to understand or teach to others with a certain sensibility in order to catch the mind, which loves the sensible and which is not easily taken with anything that does not flatter the senses. The eternal wisdom made itself sensible, but it did so without pomp; it made itself sensible not to entrench us in the sensible but to elevate us to the intelligible; it became sensible in order to condemn and sacrifice in its person all sensible things. In our knowledge of the truth, therefore, we must avail ourselves of something that is sensible but that is not too glamorous, and that does not root us to the sensible but is capable only of sustaining our mind's perception in its contemplation of purely intelligible truths. We must use something sensible that we can disperse, annihilate, and sacrifice with pleasure upon perceiving the truth toward which it will have led us. The eternal Wisdom has presented itself externally and sensibly not to give us an external orientation, but rather to make us withdraw into ourselves, so that we might consider it intelligibly according to the inner man. In our search after truth, we must therefore employ something sensible that does not keep us outside ourselves by its brilliance but makes us withdraw into ourselves, that makes us more attentive and joins us to the eternal truth, which alone presides over the mind and can enlighten it on any subject.

BOOK SIX: PART ONE

Chapter Four

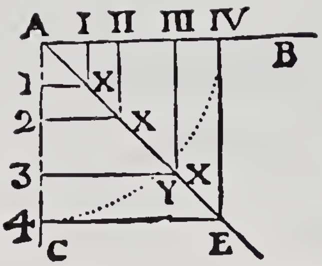
The imagination's use in preserving the mind's attention; the usefulness of geometry.

We must be very careful in choosing and making use of the aids that can be drawn from our senses and passions in order to make ourselves attentive to the truth, because our passions and senses affect us too much and so occupy the mind's capacity that it often sees only its own sensations when it thinks it is discovering things in themselves. But the same is not true of the assistance that can be drawn from our imagination. Here the mind is made more attentive without a wasteful division of its capacity and is thus remarkably aided in clearly and distinctly perceiving objects, with the result that it is almost always to our advantage to avail ourselves of its help. Let us illustrate this, however, with a few examples. <See figure, page 420.>

We are given (1) that a body is moved by two or more different causes, in two or more different directions; (2) that these forces are equal or unequal; (3) that they constantly increase or decrease at whatever known rate you like. We wish to know (1) the path this body must take; (2) where it must be at a given moment; (3) what its speed must be at a given point, and other such things.

1. From point A, which is assumed to be the point from which the body begins to move, we must first draw the undefined lines AB and AC, which, if they intersect, form the angle BAC; for AB and AC are straight, or form the same straight line, and do not intersect when the motions they express are directly opposite. In this way, we distinctly represent to the imagination, or, if you wish, to the senses, the path this body would follow if it were moved by only one of these forces toward C or B.

2. If the forces moving the body toward B and toward C are equal, we must then disect AB and AC into 1, 2, 3, 4 and I, II, III, IV equally distant from A. If the force moving it toward B is double that moving it toward C, the dissections of AB are double those of AC. If this force is half, the dissections should be half as great; and if three times greater or smaller, the dissections should be three times greater or smaller. These dissections again express to the imagination the mag-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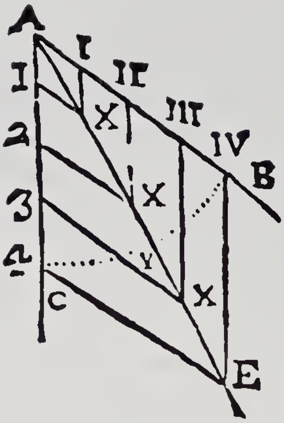
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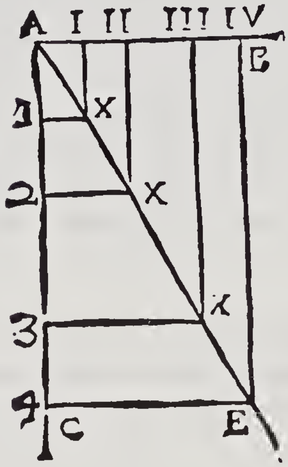
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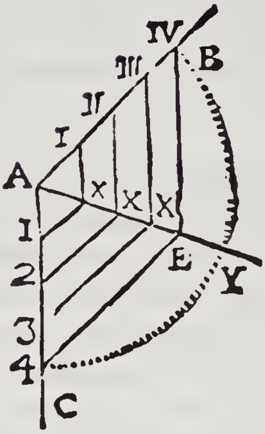
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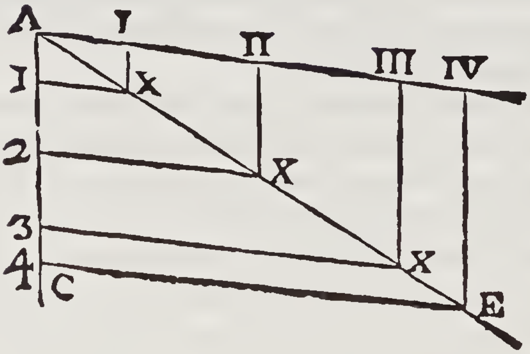
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nitude of the different forces moving the body, as well as the distance they could make it move.

3. Through these intersections we draw parallels to AB and to AC forming 1X, 2X, 3X, and so on, equal to AI, AII, AIII, and so forth, and I.X, II.X, III.X, equal to A1, A2, and A3, which express the distances these forces could make the body move. And through the intersection of these parallels we draw the line AXYE, which [a][by assuming that these forces have been fully applied to the body and that they are expressed as speeds] represents three things to the imagi-

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[a] <The addenda of the sixth edition direct that the following bracketed material be inserted here.—Trans.>

nation: first, the true magnitude of the compound motion of this body, which is conceived as moved toward both B and C by two different forces in a given proportion; second, the path it must take; and finally, all the points at which it must be at a given time. Consequently, this line serves not only to support the mind's perception in pursuing all the truths that can be discovered about the matter at hand, it also represents them in a perceptible and convincing fashion.

First, the line AXYE expresses the true magnitude of the compound motion. For we visibly perceive that if each of the forces producing it can move the body a foot a minute, its compound motion will be two feet a minute if the combining motions are in exactly the same direction; for in this case we need only add AB to AC because the forces of the combining motions are fully used in producing the compound motion. If these motions are not in exactly the same direction, the compound AE will be greater than either AB or AC by the magnitude YE. But if these motions happen to form an angle CAB of 120 degrees, the compound motion will be equal to each of them. Finally, if these motions are exactly opposite, the compound motion will be zero because, with the force of the combining motions being equal, they are counterbalanced.

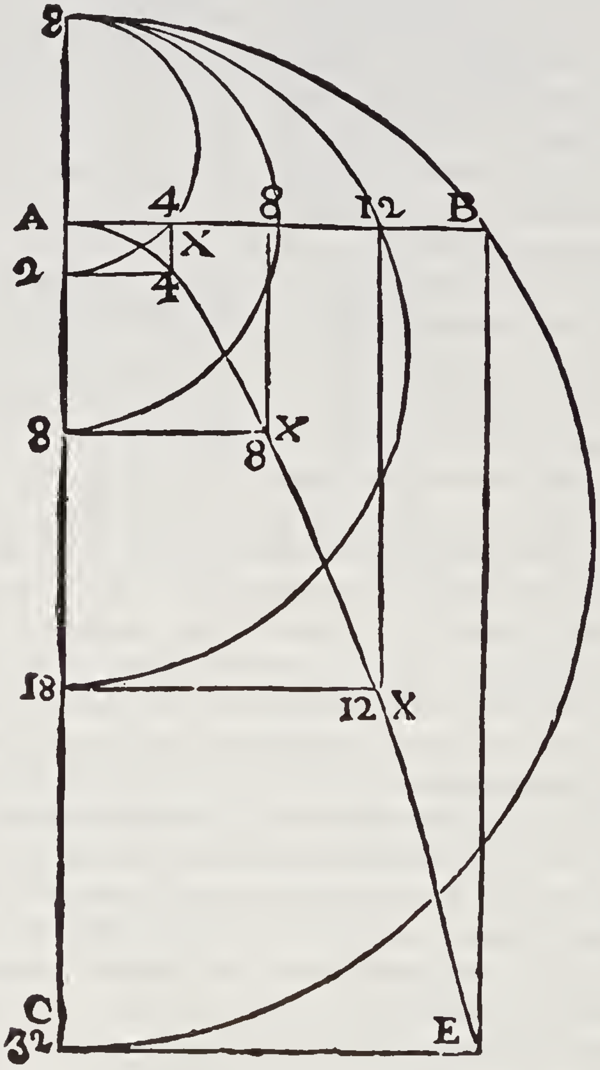
Second, the line AXYE represents to the imagination the path the body will take, and we visibly perceive to what extent it moves more in one direction than the other. We also see that every compound motion is in a straight line when each of the combining motions remains the same, even if the combining motions should not be equal to one another, or else when combining motions remain equal to one another even if they should not remain constant. Finally, it is clear that the lines describing these motions are curved when the combining motions are not equal to one another and do not remain constant.

Lastly, this line represents to the imagination all the points through which a body moved by two different forces toward two different points must pass; consequently, we can mark the exact point at which the body must be at whatever instant we want. If we want to know, for example, where it is at the beginning of the fourth minute, we need only dissect AB or AC into such parts as express the distance each of the known forces alone could make the body move in one minute, and then take three of these parts on one of the lines and draw through the beginning of the fourth 3X parallel to AB or III.X parallel to AC. For it is clear that point X marked off by one of these parallels on AXYE indicates the point at which the body will be at the beginning of the fourth minute of its motion. Thus, this way of examining questions not only sustains the mind's perception, it even shows it their solutions and sufficiently illuminates it so that it can discover many unknown things from very few things that are known.

For example, from what has been said, it is enough to know merely that a body which was at A at a certain time is at E at another, and that the forces moving it are at an angle such as BAC, in order to discover the direction of its compound motion and the different speeds of the simple motions, provided that these motions are known to be either equal to one another or constant. For when we have two points of a straight line, we have the whole line, and we can compare the straight line AE or the compound motion that is known, with the lines AB and AC, i.e., with the simple motions that are unknown.

Let us suppose again that a stone is moved uniformly from A toward B but that it falls toward a point C infinitely distant from A with an inconstant motion such as that with which we generally believe heavy bodies to tend toward the center of the earth, i.e., that the distances through which it passes stand to each other as the *squares* of the time it takes to pass through them. In this case, the line it describes will always be a *parabola,* and we shall be able to determine with utter precision the point at which it will be at each moment of its motion.

For if in the first minute the body falls two feet from A toward C, six in the second, ten in the third, fourteen in the fourth, and if its motion from A toward B, a distance of sixteen feet, is uniform, it is clear that the line it describes will be a *parabola* whose *parameter* is eight feet. For the *square* of the *applicates* (or *ordinates*) to the diameter, which indicate the time and regular motion from A toward B, will be equal to the *rectangle* formed on the *parameter* by the lines indicating the unequal and *accelerated* motions; and the *squares* of the *applicates*, i.e., the *squares* of the times, will stand to each other as do the parts of the diameter between the *pole* and the *applicates*.



16 : 64 :: 2 : 8
64 : 144 :: 8 : 18, etc.

You need only look at the sixth figure to be convinced of this, for the semicircles show that A2 is to A4 (i.e.,to the *applicate* 2X, which is equal to it) as 2X is to A8; that A18 is to A12 (i.e., to the *applied line* 18X) as 18X is to A8, and so on; that therefore the *rectangles* A2-A8 and A18-A8 are equal to the *squares* on 2X, 18X and so on, and that consequently the *squares* stand to each other in the same proportion as do the *rectangles*.

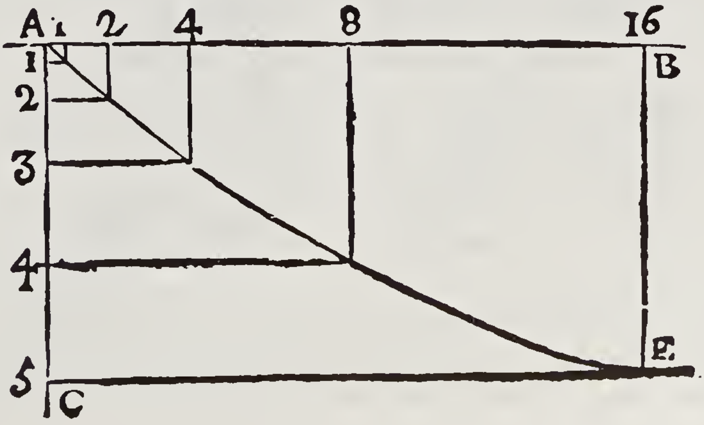
The parallels to AB and AC that intersect at points X, X, X, visibly show the path the body must take, indicating the points at which it will be at a given time. They visibly show us the true magnitude of the compound motion and of its *acceleration* for any determinate time.

Let us suppose again that a body moves unequally from A toward C and from A toward B. If the inequality is constant, i.e., if the inequalities in the motions toward B and C are equivalent, or if the motion increases at the same rate, the line it describes will be straight.

But if we suppose an inequality in the increase or decrease of the simple motions, then no matter what this inequality may be, it will always be easy to find the line that represents the compound motion to the imagination by expressing the motions with lines and then drawing intersecting parallels. For the line passing through all these intersections will represent the motion compounded from unequal simple motions that *accelerate* or decrease unequally.

If, for example, we suppose that a body is moved by two forces that are either equal or unequal as you wish; that one of these motions continuously either increases or decreases according to either an arithmetic or geometric progression as you wish; and that the other motion increases or decreases according to either a geometric or arithmetic progression as you wish; then the following is how to find the points through which the line visibly representing the compound motion will pass.

As has been said, we must first draw AB and AC to express the two simple motions, and then divide these lines according to the supposed *acceleration* of the motions. If we suppose the motion expressed by AC to increase or decrease according to the arithmetic progression 1, 2, 3, 4, 5; and if we suppose the

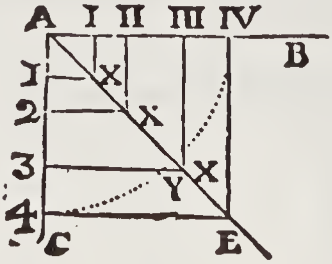


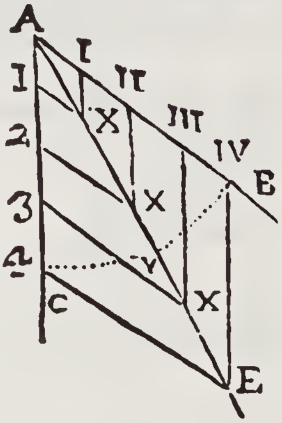
motion expressed by AB to increase according to the duplicate progression 1, 2, 4, 8, 16, or to decrease according to the subduplicate progression 4, 2, 1, ½, ¼, ⅛, then AB should be divided at the points marked 1, 2, 4, 8, 16 or 4, 2, 1, ½, ¼, ⅛. Then through these points parallels must be drawn to AB and AC; AE, which will express the compound motion we are looking for, will necessarily pass through all the points of intersection of the parallels. In this way we see the path this body must take.

If we wish to know precisely how long a body has been in motion when it is at a given point, we shall be able to tell from the lines drawn from this point parallel to AB or AC, for the divisions of AB and AC indicate time. Similarly, if we wish to know the point at which a body will be at a given time, parallels drawn from the divisions of AB and AC representing time will indicate by their intersection the point we are looking for. As for its distance from its starting point, this can easily be known by drawing a line from this point to A; for the length of this line will be known in relation to AB or AC, which are already known. But as for the distance it will have gone to reach this point, this is very difficult to know because with the line of its motion, AE, being curved we cannot relate it to any of the straight lines.

But if we wished to determine the infinite points through which this body must pass, i.e., to describe exactly and with a continuous motion the line AE, we would have to use a compass capable of drawing lines according to the conditions expressed in the suppositions we have just laid out. This compass would be very difficult to construct, impossible to use, and rather useless for discovering the relations that things have between themselves, since we do not ordinarily need all the points of which this line is composed, but only a few of them, to help the imagination when it considers such motions.

[a][But care must be taken in using geometry not to make any false supposition in violation of the certain principles pf physics. Among other things, we have supposed that if two causes can independently move a body in a minute, the one from A to B and the other from A to C, thereby making an angle between AB and AC, it would make the body describe the entire diagonal, taking the same time as the two sides. But this is true only in certain cases.





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[a] <The addenda of the sixth edition direct that the following bracked material be inserted here. —Trans.>

If, for example, we were to suppose that there are two rulers, AB and AC, set at some angle to one another, and that there is an ant that starts at point A and walks at a constant rate from A toward B; and that in the meantime we move the ruler AB by sliding it across AC at a constant rate and parallel to itself; the ant would then cover the entire diagonal AE in the same time that it would go from A to B. This needs no proof; what follows, however, is not so evident.

If a body at rest at point A is struck simultaneously by two others following the lines AB and AC, which form an angle BAC, then (1) if BAC is a right angle, the body at A will as a result of the two forces describe the complete diagonal of the parallelogram AE in the same time that it would have described one of the sides AB or AC if moved by only one of the two forces; (2) if BAC is acute, the body will describe only part of the diagonal, even if it were elastic as is supposed of all three bodies; (3) if the angle is obtuse, the body will go well beyond the diagonal, and the farther beyond it as the angle is more obtuse, in the same time that it would have described the sides.

It is clear that bodies communicate their motion only in proportion to their relative speeds. If, for example, a body with two degrees of speed comes upon another moving in the same direction with one degree of speed, then clearly it will strike it with only one degree of speed; for its speed in relation to the body fleeing it is only one degree. If it strikes the other body while it is at rest, it will strike it with twice as much speed; if it comes upon the other body when it is coming toward it with one degree of contrary speed, it will strike it with three times as much speed. In this last case, the stress or shock of these two bodies, or of a third body assumed to be between them, will be three times as great. From this it follows:

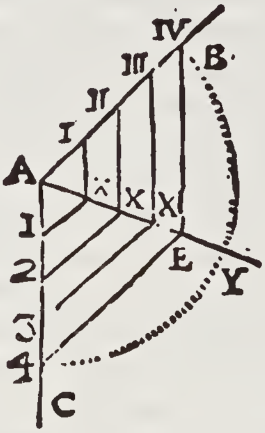
1. that when two bodies simultaneously move a third along AB and AC, which are at right angles, the body will move through the complete diagonal, for the relative speed remains the same as long as the two bodies communicate their motion to the third. The speed of the one moving it toward B is neither increased nor decreased by the speed of the one moving it toward C since the two lines are perpendicular to each other. Thus, each of these two bodies necessarily makes the same impression on the third for the short time they act together on it as if they acted separately, the thrust of the one toward B in no way affecting the thrust of the other toward C. These two bodies, then, communicate to the third all their force and, consequently, all their speed, not through the diagonal, where neither of them had a tendency to go, but each in the direction in which it was tending, i.e., along a line passing through the points at which the body was struck and its center of gravity. Thus, the third body, when moved simultaneously by two forces, will describe the full diagonal in the same time that it would the sides when moved by each of the same forces separately. For the speed along the diagonal simultaneously satisfies two speeds, each in the direction in which it was determined by the impact. I say the direction or the line BE, for example, and not toward the same point B, for the line passing through the point of impact and the center of the body (which necessarily remains parallel to itself during the body's motion) will intersect all the points on the line BE. Likewise, the force of

the third body, which describes the diagonal in the same time it would have described the sides, is equal to the sum of the two forces which would have made it describe them. $\overline{AE}^2$ is equal to $\overline{AB}^2+\overline{AC}^2$, for it should be noted that the actual forces of identical moving bodies do not stand to each other as their speeds but as the square of their speeds. The force that moves a body with one degree of speed stands to another that moves it in the same time with two degrees of speed in a ratio 1:4. This follows from what I have just proved. Indeed, since the force with which bodies act is equal to the product of their acting mass [*masse agissante*] and speed, when the two bodies are equal and the speed of one is double that of the other, the one with the greater speed has transmitted all its motion or has expended all its force against the one it meets when the other has as yet acted with only half its mass. Thus, the body with two degrees of speed actually acts with a force four times as great as the other, since both its mass and its speed are twice as great. On account of its greater speed, the action of each part of its mass is twice as great as the other's and, furthermore, with twice as many parts. For bodies transmit their motion only successively and through parts, as I have explained below in articles XX and XXIX[a]; these articles give the physical basis for the calculations required to find the motion in bodies resulting from their being struck.

Now glance at the second figure, which is on the first page of this addendum.

2. When the angle BAC is acute, the relative speeds of each of the bodies in relation to the third either diminishes or is null at the moment of stress preceding the moment it begins to move. For with the third body moved along AB with whatever speed you wish, the body moving it along AC will not act on it with the same stress or relative speed, since the third body is already moving away, or tending to move away, from it. Or, if the two bodies act on the third at the very same instant, and if the angle BAC is infinitely acute, we shall have the same result as if these two bodies were but one single mass.

3. Finally, if the angle BAC is obtuse, the third body will pass beyond point E of the diagonal AE, and the farther beyond it as the angle is more obtuse. For



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[a] <Cf. *Oeuvres complètes*, 17–1:85–87, 127–29—Trans.>

besides the fact that the diagonal decreases to the extent that the angle increases, the relative speeds of the bodies moving the third increases, becauses the motions of the bodies striking it become contrary to the extent that the angle becomes obtuse. Therefore, if the body struck by the two others were soft, it would be compressed more quickly and rebound farther, given that the parts of which it is composed could be easily separated; and if it is elastic, its parts will be compressed to the extent to which the angle is obtuse, it will be wound up tighter and will spring along the diagonal with a speed proportionate to its compression, provided that its figure allows it to escape the pressure. Consequently, we could suppose that two bodies by striking a third could move it with whatever speed you wish. But this would lead me too far from the topic.]

These examples show that we can express most of our ideas by means of lines and thereby represent them to the imagination, and that geometry, which shows us how to compare lines in order to determine their relations, is much more useful than is ordinarily thought. For in the final analysis, astronomy, music, mechanics, and generally all the sciences that deal with things that vary quantitatively, and that as a result can be treated as extended, i.e., all the exact sciences, can be related to geometry. [This is so,] because as all speculative truths involve only the relations of things, and the relations between their relations, they are all easily related to lines. Their conclusions can be drawn geometrically, and as these conclusions are illustrated by the lines representing them, it is almost impossible to go astray, and these sciences can be advanced a great deal with little difficulty.

The reason why, for example, we notice so distinctly and can mark out with such precision the musical eighth, fifth, and fourth, is that we express these sounds with strings that are divided exactly, and that we know (1) that the string which sounds the octave is in duplicate proportion with the string with which the octave is formed, and (2) that the fifth is in sesquilateral, or three-to-two proportion, and so on for the others. For the ear alone is unable to judge sounds with the precision necessary for a science. The most practiced and discerning ear still is not sensitive enough to recognize the difference between certain sounds, and those relying on it deceive themselves into thinking there is none because they judge things only according to their sensations of them. There are those who find no difference between an octave and a third. Some even fancy that the major and minor keys do not differ; as a result of this, they fail to notice the *comma* that distinguishes them, and even more so the *schisma* that is only half a *comma*.

Only reason, then, can clearly show us that as the space of string that differentiates certain sounds can be divided into several parts, there can be even more sounds, both with and without use for music, that the ear cannot discern. From this it is clear that without arithmetic and geometry, we would have no precise knowledge of music, and any success in music would be due to luck and imagination, i.e., music would no longer be a science based on indisputable demonstrations, although airs composed through strength of imagination might be more beautiful and pleasant to the senses than airs composed with rules.

Likewise in mechanics, the weight of a body as well as the distance from its center of gravity to the fulcrum, each of them capable of quantitative variation, can be expressed with lines. Thus can we use geometry to discover and demonstrate an infinty of new things that are very useful in life and that, because of the certainty accompanying them, are even very pleasant to the mind.

If, for example, you wish to balance a weight of six pounds with another of only three pounds, with the weight of six pounds attached to the arm of a balance two feet from the fulcrum, then if you know the most general principle of all mechanics: *that for weights to rest in equilibrium, they must be in reciprocal proportion to their distances from the fulcrum,* i.e., the one weight must stand to the other as the other's distance from the same fulcrum; it will be easy to find by means of geometry what the distance of the three-pound weight must be for the whole to be in quilibrium. You can do so by using the twelfth proposition of the sixth book of Euclid to find a fourth proportional line, which will be four feet long. Consequently, by applying geometry to mechanics, i.e., by visibly expressing with lines all the things considered in mechanics, you need know only this basic principle of mechanics to discover with certainty all the truths that depend on it.

The lines and figures of geometry, then, are well-suited for representing relations between magnitudes to the imagination, or between things that vary quantitatively, such as space, time, weight, and so on, as much because they are simple objects as because they can be imagined very easily. We might even say, on behalf of geometry, that lines can represent to the imagination more things than the mind can know, since lines can express relations of incommensurable magnitudes, i.e., magnitudes with relations we cannot know because there is no measure by means of which they can be compared. But this advantage of geometry is not very significant in the search after truth, since these visible representations of incommensurable magnitudes do not distinctly reveal to the mind their true magnitude.

Geometry, then, is very helpful in making the mind attentive to things whose relations we wish to discover, but it must be admitted that sometimes geometry is an occasion of error for us because we attend so closely to the pleasant and certain demonstrations provided by this science that we completely turn our attention away from nature. It is mainly for this reason that not all the machines we invent work, and that not all the musical compositions in which proportions of consonance are best observed are the most pleasant, and that the most exact astronomical calculations do not always best predict the size and duration of eclipses. Nature is not abstract; the levers and balls of mechanics are not the lines and circles of mathematics. Our tastes for musical airs are not always the same in all men, nor in the same men at different times; they change in the strangest ways according to the different agitations of the spirits. Finally, as far as astronomy is concerned, there is no perfect regularity to be found in planetary motion; floating through these vast spaces, the planets are carried along by the fluid matter that surrounds them. Thus, the errors we fall into in astronomy, mechanics, music, and all the other sciences to which geometry is applied, come not from geometry itself, which is an incontrovertible science, but from our faulty application of it.

We assume, for example, that planetary motion describes perfectly regular circles and elipses, which is not true. We do well to make this assumption in order to reason, and also because it is not far from the truth; but we should always remember that the premise on which we are reasoning is an assumption. Likewise in mechanics, we assume that the balls and levers are perfectly hard and, like the lines and circles of mathematics, without weight or friction—or rather, we do not sufficiently consider their weight, their friction, their matter, or the relations these things have to each other; that hardness and size increase weight, and that weight increases friction; that friction decreases force and either destroys or slowly wears down the machine, so that what almost always works in miniature hardly ever works on a large scale.

We should not be surprised at our errors, then, since we base our reasoning here on premises that are not known precisely. Nor should it be fancied that geometry is useless because it fails to deliver us from all our errors. It draws conclusions for us from the assumptions we have made. By making us attentive to what we consider, it makes us know with certainty. By means of geometry, we even see whether our assumptions are false—for, as we are always sure that our reasoning is true, if experience fails to agree with it, we see that our assumed premises are false. But without geometry and arithmetic, nothing that is somewhat difficult in the exact sciences can be learned, even though we may have principles that are certain and indisputable.

Geometry, then, should be regarded as a kind of universal science that opens the mind, makes it attentive, and gives it the skill to control the imagination and to draw from it all the help it can give; for with the help of geometry the mind controls the imagination, and a controlled imagination sustains the mind's perception and attention.

But in order to be able to use geometry properly, it should be noted that not everything within the imagination's scope can be imagined with equal ease; for not all images equally occupy the mind's capacity. It is more difficult to imagine a solid than a surface, and a surface than a simple line, because a clear perception of a solid involves more thought than does the clear perception of a surface or a line. This is also true of different lines: more thought, i.e., greater capacity of mind, is needed to represent a parabolical, elliptical, or some other compound line than to represent the circumference of a circle, and more for the circumference of a circle than for a straight line, because it is more difficult to imagine lines whose path is very complex and which have many relations than those whose path is quite simple or which have few relations. For relations cannot be perceived clearly without the mind's attention to several things, whose number determines how much thought is required to perceive them. There are, then, figures so complex that the mind lacks sufficient scope to imagine them distinctly, whereas it can imagine others quite easily.

Of the three kinds of angles, acute, right, and obtuse, only the right angle awakens in the mind an idea that is distinct and well-defined. There are an infinity of acute angles that all differ from one another, and the same is true for obtuse angles. Thus, when we imagine an acute or an obtuse angle, we imagine nothing either exact or distinct. But when we imagine a right angle, we cannot be mistaken, our idea of it is quite distinct, and the image we form of it in the brain generally is sufficiently accurate.

True, we can also specify the vague idea of an acute angle as the specific idea of an angle of thirty degrees, and the idea of an angle of thirty degrees is as exact as that of ninety degrees, i.e., of a right angle. But the image we would try to form of it in the brain would not be nearly as accurate as that of a right angle. We are not accustomed to representing this image, and we can trace it only by thinking of a circle or of a determinate part of a circle divided into equal parts. But to imagine a right angle, we need not think about a circle divided in this way; the mere idea of a perpendicular allows the imagination to trace the image of this angle, and we find no difficulty in representing perpendiculars because we are accustomed to seeing things upright.

It is easy to conclude, then, that to have an object that is simple, distinct, well-defined, suitable for being easily imagined and, consequently, for making the mind attentive and preserving clarity in the truths it seeks, all the magnitudes we consider must be related either to simple surfaces bounded by lines and right angles, like perfect squares and other rectangular figures, or else to simple straight lines; for these are the figures whose nature we know more easily.

I might have attributed to the senses the help we draw from geometry in preserving the mind's attention; but I thought that even though lines are sensible things, geometry belonged more to the imagination than to the senses. There would be no point in spelling out here my reasons for thinking so, since they would only justify the order of what I have just discussed, which is not something essential. Nor have I discussed arithmetic or algebra, because the numbers and letters of the alphabet used in these sciences are useful, not so much for increasing the mind's attention, as for extending it scope, as we shall explain in the following chapter.

There you have the general aids for making the mind more attentive. I know of no others unless it is for the will to be attentive, which I have not discussed at all, for I assume that everyone engaged in study wishes to attend to what he is studying.

Nonetheless, there are many other aids that are peculiar to individual people, such as certain beverages, meats, places, dispositions of the body, and several others that each of us must learn from his own experience. We must observe the state of our imagination after eating and consider which things maintain and which dissipate the mind's attention. It might be said in general that a moderate use of food that produces a great deal of animal spirits is best suited both for increasing the mind's attention as well as for strengthening the imagination of those in whom it is weak and languid.

BOOK SIX: PART ONE
Chapter Five

The ways to increase the mind's scope and capacity. That arithmetic and algebra are absolutely necessary for this.

First, we should not fancy that we can ever actually increase the mind's scope and capacity. Man's soul is, as it were, a determinate quantity or portion of thought, which has limits beyond which it cannot pass. It cannot grow larger or more extended than it already is; it does not expand as certain metals and liquids are believed to. Finally, it seems to me—I know of no convincing proof to the contrary—that it never perceives more at one time than at another.

I grant that this seems to be contradicted by experience. We often think about a great many objects; often we think only about one object, and frequently we even say that we are not thinking about anything. Yet if it be considered that thought is to the soul what extension is to body, it will be clearly seen that just as a body cannot be extended more at one time than at another, so the soul, properly understood, can never think more at one time than at another—whether it perceives several objects, or one only, or even when we are said to perceive nothing at all.

However, for two main reasons we are led to believe that we think more at one time than at another. The first is that we sometimes have so much freedom of mind that in one minute, for example, we can have sixty thoughts in rapid succession, and at other times our mind has but the same thought for a minute. But it does not follow from this that we think more at one time or, to speak unequivocally, at one instant than at another. We have sixty different thoughts, but we have each of them for only one second, which is the same as having the same thought for sixty seconds. When I open my eyes in the countryside, as long as I do not move my eyes, the sensation I have is as great as when I move them from side to side; that is, my capacity for seeing is not increased by the variety of successive perceptions. I see more objects, but my vision is not any better, nor does it have any greater scope.

The other reason that leads us to believe that we think more at one time than at another is that we do not sufficiently distinguish between confused and distinct perception. Undoubtedly, either more thought is required, or our capacity for thinking must be occupied more in perceiving several things distinctly than in perceiving only one thing distinctly; but no more thought is required for perceiving several things confusedly than for perceiving a single thing distinctly. Thus, there is no more thought in the soul when it thinks of several objects than when it thinks of only one, since if it thinks about only one, it always perceives it much more clearly than when it applies itself to several.

For it should be noted that a simple perception sometimes contains as much thought, i.e., that it occupies as much of the mind's capacity for thinking, as a judgment or even a complex inference, since experience shows that a lively, clear, and compelling simple perception of a single thing occupies us as much as a complex inference, or the obscure and confused perception of several relations between several things.

For just as there is as much or more sensation involved in the visual perception of an object that I hold close to my eyes and carefully examine as in the perception of an entire countryside that I look at haphazardly and without much attention, with the result that the clarity of the sensation I have of the object near my eyes makes up for the scope of my confused sensation of the many things I see at random in the countryside, so the perception the mind has of a single object is sometimes so lively and distinct that it contains as much or even more thought than the perception of the relations between several objects.

I grant that at certain times it seems to us that we are thinking only about a single thing and that we yet have trouble in fully comprehending it, whereas at other times we have no difficulty in comprehending it as well as many other things. And from this we fancy that the soul has greater scope or greater capacity for thought at one time than at another; but it seems to me that we are mistaken in this. The reason why at certain times we have difficulty in conceiving the easiest things is not that the soul's thought or capacity for thinking is diminished, but that this capacity is occupied by some lively sensation of pleasure or pain or by a great number of weak and obscure sensations causing a kind of giddiness, which is generally only a confused sensation of a great number of things.

A piece of wax can have but one figure; it cannot have two figures without the one mixing with the other, for it cannot be completely round and square at the same time. Finally, if it receives a million different figures, none of them will be distinct. Now, if this piece of wax could know its own figures, it nonetheless would be incapable of knowing which of the figures defined it, should there be a large number of them. The same is true of the soul when a great number of modifications occupy its capacity; it cannot perceive them distinctly because it does not sense them separately. Thus, it thinks that it perceives nothing. It cannot tell that it senses pain, pleasure, light, sound, tastes—it perceives none of those, yet they are all it perceives.

But even if we were to assume that the soul was not subject to the confused and unruly motion of the animal spirits, and that it was so free of its body that its thoughts in no way depended on what takes place in it, still we might understand certain things with greater ease at one time than at another without the capacity of our soul being decreased or increased, because in this case we might think about other particular things or about indeterminate being in general. Let me elaborate.

The general idea of the infinite is inseparable from the mind and occupies its full capacity when it is not thinking about some particular thing. For when we say that we are thinking about nothing, that does not mean that we are not thinking about this general idea, but simply that we are not thinking about some particular thing.

Surely, if this idea did not fill our mind we would be unable to think as we do about all sorts of things, for one cannot think about things of which one has no knowledge. And if this idea were not more present to the mind when we seem to be thinking about nothing than when we are thinking about some particular thing, it would be as easy for us to think about whatever we want when we are deeply occupied with some particular truth as when we are occupied with nothing at all, and this is contrary to experience. When, for example, we are deeply occupied with some proposition in geometry, it is not as easy for us to think about other things as when we are occupied with no particular thought. Thus, one thinks more about infinite and universal being when one thinks less about particular, finite beings, and one always thinks as much at one time as at another. But be that as it may, it seems to me certain that the mind's scope and capacity cannot be increased by expanding it, as it were, or by giving it more reality than it naturally has, but only by skillfully conserving it. Now this is what is perfectly achieved through arithmetic and algebra; for these sciences show how to simplify ideas in such a way and to consider them so methodically that though the mind might have but little scope, it can, with the help of these sciences, discover very complex truths that at first seem incomprehensible.

Truth is nothing else but a real relation, whether of equality or inequality. Falsehood is but the *negation* of truth, or a false and imaginary relation. Truth is that which is; falsity does not exist, or, if you wish, is that which is not. We are never deceived when we perceive relations that exist, but we are always deceived when we judge that we perceive certain relations and they do not exist; for here we perceive falsity, we perceive what does not exist, or rather, we do not perceive at all, since nothingness cannot be perceived, and the false is a relation that does not exist. Whoever perceives the relation of equality between twice two and four perceives a truth, for the relation of equality that he perceives is as he perceives it. Likewise, whoever perceives a relation of inequality between twice two and five perceives a truth, because he perceives a relation of inequality that exists. But whoever judges that he perceives a relation of equality between twice two and five is mistaken, because he perceives, or, rather, thinks he perceives, a relation of equality that does not exist. Truths, then, are only relations, and the knowledge of truths the knowledge of relations.

There are three kinds of relations or truths. There are those between ideas, between things and their ideas, and between things only. It is true that twice two is four—here is a truth between ideas. It is true that the sun exists—this is a truth between a thing and its idea. It is true that the earth is larger than the moon—here is a truth that is only between things.

Of those three sorts of truths, those between ideas are eternal and immutable, and because of their immutability, they are the standards [*les régles & les mesures*] for all other truths, for every standard must be invariable. This is why only these sorts of truths are considered in arithmetic, algebra, and geometry, because these universal sciences both determine and contain all the particular sciences. All the relations or truths between created things, or between ideas and created things, are subject to the change to which every creature is liable. Only the truths between ideas are immutable, because God is not subject to change, nor, consequently, are the ideas He contains.

Thus, we use the mind alone to try to discover only truths between ideas, for we almost always employ the senses to discover the other sorts of truths. We use our eyes and our hands to assure ourselves of the existence of things, and to recognize the relations of equality and inequality between them. Relations of ideas are the only ones the mind can know infallibly and by itself without the use of the senses. But not only are there relations between ideas, but also between the relations between ideas, relations between these relations, and finally between collections of several relations, and between relations between collections of relations, *ad infinitum*, that is to say, truths can be compounded *ad infinitum*. In geometry we call the way in which a given magnitude or idea contains or is contained by another (the relation of four to two, or of twice two, for example) a *geometrical ratio*, or simply, a *ratio*. For the deficiency or excess of one idea over another or, to use the ordinary terms, the deficiency or excess of a magnitude is not properly a ratio, nor are equal excesses or deficiencies of magnitudes equal ratios.

Now it should be noted that all relations or all ratios, both simple and complex, are true magnitudes, and that the very term magnitude is a relative term necessarily indicating some relation. For nothing is great by itself and without relation to something else, unless it be infinity or unity. All whole numbers are relations just as truly as are fractions or numbers compared to each other or divided by some number, though we do not realize this because whole numbers can be expressed by a single number. Four, for example, or 8/2 is a relation just as truly as 1/4 or 2/8. The unity to which four is related, though not expressed, is understood, for four is a relation as much as 1/4 or 2/8, since four is equal to 4/1 or 8/2. As every magnitude is a relation then, and as every relation is a magnitude, we can clearly express all relations by numbers and represent them to the imagination with lines.

Thus, since all truths are only relations, in order to know all truths exactly, whether simple or complex, it is enough to know all relations exactly, both simple and complex. As we have just said, there are two kinds of relations: those of equality and those of inequality. It is clear that all relations of equality are alike, and that as soon as we realize that one thing is equal to another known thing, we know its relation exactly. But such is not the case with inequality. We know that a tower is bigger than a fathom and smaller than a thousand fathoms, but still we do not know its precise size or the relation it has to one fathom.

In order to compare things, or rather to measure relations of inequality with precision, a precise measure is required; we need an idea that is both simple and perfectly intelligible, a universal measure that can be adapted to every sort of object. This measure is unity. For each kind of magnitude, a specific amount is taken as the unity or common measure; for example, a fathom for measures of length, an hour for time, a pound for weight, and so on, and all these unities are divisible to infinity. The following is how arithmetic shows us the way to express all sorts of magnitudes, how to compare them, and how to discover their relations.

In arithmetic all magnitudes are expressed in very simple fashion with nine numbers, following the relation they have to the unit, i.e., depending on whether they contain the unit or a determinate number of equal parts of the unit. Magnitudes that contain the unit exactly are expressed by *whole* numbers; those that contain only a determinate number of the unit's parts are expressed by *broken* numbers, also called *fractions*. Arithmetic also has individual expressions for magnitudes called *incommensurables* because they have no common measure with the unit, i.e., however many equal parts the unit can be conceived as divided into, incommensurable magnitudes contain none of these parts a specific number of times, there always being the slightest remainder less than one of these parts. Thus, arithmetic provides the means of expressing all the simple and complex relations possible between magnitudes. It then shows us how to perform the calculations to deduce these relations from one another, and to discover the relations of magnitudes that might be useful by means of those already known; and it shows us how to do this with skill, with clarity, and with a remarkable exploitation of the mind's meager capacity.

It is clear that man's mind is so meager, his memory so unfaithful, and his imagination of so little scope, that without using numbers and written symbols, and without the skill employed in arithmetic, it would be impossible to perform the operations necessary for knowing the precise inequality of magnitudes and their relations, nor could we make any progress in the knowledge of complex truths.

Nonetheless, algebra and analysis are entirely different from arithmetic. They divide the mind's capacity a great deal less; they simplify ideas in the simplest and easiest way conceivable. What can be done with arithmetic only in a great deal of time can be done in a minute with algebra and analysis, without the mind becoming entangled in manipulating numbers in lengthy operations. An individual arithmetical operation discovers only one truth; a similar algebraic operation discovers an infinity of them.

Algebra expresses magnitudes of every possible kind, as well as the relations they might have, by means of letters of the alphabet, which are our simplest and most familiar characters. It shows us how to perform, on these lettered magnitudes, all the calculations to deduce the most difficult and complex relations that we might desire to know from the relations of the same magnitudes that are already known. These are the simplest, easiest, and at the same time, most universal calculations conceivable. It preserves in them the same expression of magnitudes that must be kept in view if a perfect knowledge of the magnitudes of which they are composed is to be gained. It reduces to simple and general expressions of only a few letters the solutions to an infinite number of problems and often of even whole sciences. You will find two examples of this here; one at the end of the section on the laws of motion, the other at the end of this work.

Analysis is the art of employing the calculations of algebra and arithmetic in discovering all we want to know about magnitudes and their relations. In order to solve all problems about magnitudes, it first shows us how to represent the unknown magnitudes we are looking for by means of individual characters, generally the latter letters of the alphabet, and known magnitudes by other letters, usually the first letters of the alphabet, though these expressions are arbitrary. It then shows us how to use known relations between known and unknown magnitudes to reduce each problem to equations expressing all their values. Finally, by adopting the axiom that when magnitudes are equal their equality is always preserved by increasing or decreasing them equally, it sets out the operations that must be performed on the two equal members of each equation in order to isolate the unknown members, thereby making them equal to magnitudes that are fully known. This solves the problem; and when the problem can have several solutions, they too are shown.

As far as the discovery of truths in compound geometry is concerned, analysis teaches us how to reduce the curved lines of this science to equations that express their principal properties; then, by means of the calculus, how to draw from these equations all the other properties of such figures. It also gives us the means to distinguish and to describe their different kinds, and finally, it teaches us the main uses that can be made of them.

The invention of the differential and integral calculus has extended analysis beyond limit, as it were. For these new calculi have placed an infinity of mechanical figures and problems of physics under its jurisdiction. They have provided it with a means of expressing infinitely small elements that we can conceive as composing the circumference of curved lines, as well as the area of figures and the volume of bodies defined by curved lines; they have provided it with a means of answering, in a simple and general way by calculating the expression of these elements, problems whose solutions are both useful and the most complex that can be stated in geometry.

BOOK SIX: PART TWO
Chapter One

Rules to be observed in the search after truth.

Having explained the means that must be used to increase the mind's attention and scope, which are the only means that can make it more perfect, i.e., more enlightened and penetrating, we come to the rules that absolutely must be observed in the resolution of all questions. These will occupy me for quite a while, and I shall try to explain them thoroughly by using several examples in order to make their necessity more manifest and to accustom the mind to using them, because the most necessary and difficult thing is not knowing them well but practicing them well.

We should not expect anything very extraordinary here, or anything that surprises and taxes the mind very much. On the contrary, in order for these rules to be good, they must be simple and natural, few in number, very intelligible, and interdependent. In a word, they should only guide our minds and regulate our attention without dividing it, for experience shows clearly enough that Aristotle's logic is not very useful because it occupies the mind too much and diverts attention that it should have brought to bear upon the subjects it is examining. Therefore, let those who love only mysteries and extraordinary inventions temporarily quit this bizarre mood, and channel all the attention of which they are capable toward the investigation of whether the rules to be given are sufficient for always preserving the evidence in the mind's perceptions, and for discovering the most hidden truths. If they are not unjustly prejudiced against the simplicity and facility of these rules, I hope they will recognize through the use that can be made of them (which we shall show next,) that the clearest and simplest principles are the most fruitful, and that extraordinary and difficult things are not always as useful as our vain curiosity makes us believe.

The principle of all these rules is that *it is always necessary to keep our reasoning clear to discover the truth without fear of being mistaken.* On this principle depends the general rule regarding the subject of our studies, namely: *that we should reason only about things of which we have clear ideas;* and, as a necessary consequence of this, *that we should always begin with the simplest and* *easiest things, and pause there for a considerable time before undertaking the search after the most complex and difficult ones.*

The rules regarding the way in which we must go about resolving questions also depend on this same principle; and the first of these rules is: *the state of the question we propose to resolve must be very distinctly conceived.* We must have sufficiently distinct ideas of our terms to be able to compare them, and thus to recognize the relations we seek among them.

But when we cannot recognize the relations between things by immediate comparison, the second rule is: *it is necessary through some effort of the mind to discover one or several intermediary ideas that can serve as a common measure for recognizing by their means the relationships between them.* We must be sure that these ideas are clearer and more distinct in proportion as the relations we try to discover are more numerous and exact.

But when the questions are difficult and controversial, the third rule is: *the subject being considered must be carefully simplified in order to avoid examining things that are irrelevant to the discovery of the truth sought.* For the capacity of the mind must never be uselessly divided, and all its strength should be applied only to things that can enlighten it. The things that can be so eliminated are all those that do not affect the question and whose elimination leaves the question intact.

When the question is thus reduced to its fewest terms, the fourth rule is: *it is necessary to divide the subject of our meditation into parts and to consider them all one after the other according to natural order, beginning with the simplest, i.e., those that involve fewer relations, and never advancing to the more complex before having distinctly recognized the simplest and having become familiar with them.*

When these things have become familiar through meditation, the fifth rule is: *we should simplify their ideas, and afterward arrange them in our imagination or write them on paper so they will no longer occupy the entire capacity of the mind.* Although this rule is always useful, it is only absolutely necessary in very difficult questions that demand that the mind be wide-ranging, because the mind is expanded only by simplifying its ideas. The utility of this rule, and of those that follow, is well recognized only in algebra.

When the ideas of all things whose consideration is absolutely necessary are clear, familiar, simplified, and ordered in the imagination or expressed on paper, the sixth rule is: *they must all be compared according to the rules of combination, alternately with one another, either by the mind's eye alone, or by the movement of the imagination together with the mind's eye, or by the calculation of the pen joined to the attention of the mind and imagination.*

If the relation we seek is not found among those resulting from all these comparisons, *it is once more necessary to eliminate all these relations, omitting those that are irrelevant to the question, to become familiar with the others, simplify and arrange them on paper, compare them according to the rules of combination, and see if the complex relation we seek is among all the complex relations resulting from these new comparisons.*

If none of the relations discovered in this way contains the resolution of the question, *it is once again necessary to eliminate the useless relations, become familiar with the others, and so on.* By continuing in this manner, we shall discover the truth or relation we seek, however complex it is, provided that we can expand the capacity of the mind sufficiently by simplifying its ideas, and that during all these operations we always keep our goal in sight. For it is the continual study of the question that must govern all the steps of the mind, since we must always know where we are going and what we are seeking.

Above all it is necessary to beware being content with some glimmer or probability. We must take the comparisons that aid in discovering the truth we are seeking, and begin them anew so often that we cannot prevent ourselves from believing it without feeling the secret reproaches of the Master, who responds to our question, i.e., to our toil, to the application of our minds, and to the desires of our hearts. And then we shall be able to use this truth as an infallible principle for advancing in the sciences.

Not all these rules we have just given are generally necessary in every kind of question; for when the questions are very easy, the first rule suffices; and in some other questions, only the first and second are needed. In a word, since we must make use of these rules until we have discovered the truth we are seeking, it is necessary to practice them all the more as the questions get more difficult.

These rules are not great in number. They all depend upon each other. They are natural, and we can become so familiar with them that we shall be able to use them without giving them much thought. In a word, they can regulate the attention of the mind without dividing it, i.e., they play the role one wishes them to play. But they appear to be of such little importance by themselves that it is necessary, in order to make them more estimable, for me to show that philosophers fell into many errors and exaggerations merely because they did not observe the first two, which are the principal and easiest ones, and that it is also through the use Descartes made of them that he discovered all the great and fruitful truths by which we can be instructed in his works.

BOOK SIX: PART TWO

Chapter Two

The general rule concerning the subject of our studies. That the school philosophers do not observe it, which is the cause of several errors in physics.

The first of these rules, and the one that concerns the subject of our studies, teaches us *that we must reason only on the basis of clear ideas*. From that we should draw the conclusion that, to study methodically, it is necessary to begin with the simplest and most easily understood things and to dwell upon them, even for a long time, before undertaking the search for the most complex and difficult ones.

Everyone will easily agree on the necessity of this general rule, for it is clear enough that to reason on the basis of obscure ideas and uncertain principles is to walk in darkness. But perhaps you will be surprised if I say that it is almost never observed, and that most of the sciences that are presently still the subject of the pride of some false scholars are based on ideas either too confused or too general to be useful in the search after truth.

Aristotle, who justly deserves the status of *Prince* of these philosophers because he is the father of that philosophy which they cultivate so carefully, nearly always reasons only on the confused ideas received through the senses and on other vague, general, and indeterminate ideas that represent nothing in particular to the mind. For ordinary terms, to this philosopher, can serve only to explain confusedly to the senses and imagination the confused sensations we have of sensible things, or to make us speak so vaguely and indeterminately that we express nothing distinct. Nearly all his works, but mainly his eight books about physics, on which there are as many different commentators as there are teachers of philosophy, are only pure logic. In them, he teaches only general terms that can be used in physics. He talks a lot and says nothing. It is not that he is diffuse but that he has the secret of being concise and saying nothing but words. In his other works he does not make such frequent use of general terms, but the ones he uses arouse only the confused ideas of the senses. It is through these ideas that he claims in these problems (and elsewhere) to resolve in two words an infinity of questions that can be shown to be unresolvable.

But in order that you can better understand what I mean, you should remember what I have proved elsewhere:[a] that all terms which arouse only sensible ideas are equivocal; but (which is to be considered) that they are equivocal because of error and ignorance and consequently that they are the cause of an infinite number of errors.

The word *ram* is equivocal. It means an animal that chews and a constellation that the sun enters in spring; but it is rare that one is mistaken there. For it takes an enthusiastic astrologer to imagine some relation between these two things and to believe, for example, that we are prone to vomit the medicines we take at that time because the ram chews. But as for the terms of sensible ideas, almost no one recognizes that they are equivocal. Aristotle and the ancient philosophers barely thought about the matter. You will agree if you read something of their works, and if you distinctly perceive the cause of the ambiguity of these terms. For nothing is more obvious than the fact that philosophers believed the complete opposite of what must be believed about this subject.

For example, when philosophers say that fire is hot, grass green, sugar sweet, and so on, they mean, like children and the common man, that fire contains what they feel when they are warm; that grass has on it the colors they believe they see there; that sugar contains the sweetness that they sense in eating it, and so on of all things we see or feel. It is impossible to doubt this in reading their writings. They speak of sensible qualities as sensations; they take motion for heat; and they thus confuse, because of the equivocation of the terms, the modes of bodies with those of minds.

Only since Descartes do we respond to these confused and indeterminate questions, whether fire is hot, grass green, sugar sweet, and so on, by distinguishing the equivocation of the sensible terms that express them. If by heat, color, flavor, you mean such and such a movement of insensible parts, then fire is hot, grass green, sugar sweet. But if by heat and the other qualities you mean what I feel near fire, what I see when I see grass, and so forth, then fire is not hot at all, nor is grass green, and so forth, for the heat we feel and the colors we see are only in the soul, as I proved in the first book. Now, as men think that what they sense is the same thing that is in the object, they believe they have the right to judge the qualities of objects by their sensations of them. Thus, they do not say two words without saying something false, and they say nothing about this matter that is not obscure and confused. Here are several reasons for this.

First, because all men do not have the same sensations of the same objects, nor does the same man at different times, or when he senses these same objects through different parts of the body. What seems sweet to one person seems bitter to another; what is hot to one is cold to the other; what seems hot to one person when he is cold seems cold to this same person when he is hot or when he senses through different parts of his body. If water seems hot to one hand, it often seems cold to the other, or if we wash some part close to the heart with it. Salt seems salty to the tongue, and smarting or stinging to a sore. Sugar is sweet to the tongue and aloe extremely bitter, but nothing is sweet or bitter through the other senses. Thus, when we say this or that thing is cold, sweet, or bitter, it means nothing certain.

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[a] Bk. 1.

Second, because different objects can cause the same sensation of color; plaster, bread, sugar, salt, and so on, have the same sensation of color; nevertheless, their whiteness is different if one judges it other than through the senses. Thus, when one says that flour is white, one says nothing distinct.

The third reason is that the qualities of bodies that cause totally different sensations in us are nearly the same, and, on the contrary, those of which we have nearly the same sensations are often very different. The qualities of sweetness and bitterness in objects differ hardly at all. The motions that cause pain and tickling differ only in degree; yet, the sensations of tickling and pain are essentially different. On the other hand, the tartness of a fruit does not seem to our sense of taste as different from bitterness as sweetness does. Nonetheless, this quality is as far from being bitter as it can be, since a fruit that is tart because it is green must undergo a very great number of changes before it becomes bitter with the bitterness that is caused by rottenness or overripeness. When fruits are ripe, they seem sweet; and when they are a little too ripe, they seem bitter. Bitterness and sweetness in fruits differ therefore only in degree, and that is why there are people who find them sweet when others find them bitter; for there are even some who find that aloe is as sweet as honey. It is the same with all sensible ideas. The terms *sweet, bitter, salty, tart, acid,* and so on; *red, green, yellow,* and so on; such and such an odor, flavor, color, and so on, are therefore all *equivocal,* and arouse no clear and distinct idea in the mind. Nevertheless, the School philosophers and the common man judge all sensible qualities of bodies only by the sensations that they receive from them.

Not only do these philosophers judge sensible qualities by the sensations that they receive from them, they even judge things in the light of the judgments that they have made concerning the sensible qualities. For, from the fact that they have essentially different sensations of certain qualities, they judge that there is a generation of new forms that produce these imaginary differences of quality. Wheat appears yellow, hard, and so on; flour, white, soft, and so on; and from that they conclude, on the reports of their eyes and hands, that these are essentially different bodies, which shows that they do not think about the way in which wheat is changed into flour. Nevertheless, flour is nothing but crushed and ground wheat, just as a fire is nothing but divided and agitated wood, cinders only the heaviest wood divided without being agitated, and glass nothing but cinders of which every particle has been polished and rounded off a bit by the rubbing caused by fire, and so on with the other transmutations of bodies.

It is therefore obvious that terms for sensible ideas are completely useless for the distinct proposal and clear resolution of questions, i.e., for the discovery of truth. Nevertheless, there are no questions, as encumbered as they may be by the equivocal terms of sense, that Aristotle and the majority of philosophers do not claim to resolve in their books, without these distinctions we have just given, because these terms are equivocal through error and ignorance.

Consider, for example, those who have spent all their lives reading the ancient philosophers or doctors, and who have been entirely captivated by their spirit and opinions. If one asks them whether water is moist, fire dry, wine hot, the blood of fish cold, whether water is harder than wine, gold more perfect than quicksilver, whether plants and animals have souls, and a million other indeterminate questions, they will answer them imprudently without consulting anything other than the impressions these objects have made on their senses, or those which their reading has left on their memory. They will not see that these terms are equivocal; they will find it strange that we want to define them, and they will lose patience if we try to make them see that they are going a little too fast and that their senses are beguiling them. They will always use any distinction for confusing the most obvious things, and in these questions, where it is necessary to omit the equivocal, they find nothing to distinguish.

If we consider that most of the questions of philosophers and doctors include some equivocal terms similar to those of which we are speaking, we shall not be able to doubt that these scholars, who could not define these terms, also could not say anything well-founded in the huge volumes that they composed about them, and what I have just said suffices to overturn nearly all the opinions of the ancients. Such is not the case with Descartes. He knew how to distinguish these things perfectly. He does not resolve questions through sensible ideas, and if one takes the trouble to read him, one will see that he explains the principal effects of nature in a clear, obvious, and often demonstrative manner using the only ideas that are distinct, i.e., those of extension, figure, and motion, the principal effects of nature.

The other type of equivocal terms used by philosophers includes all these general terms of logic with which it is easy to explain all things without having the slightest knowledge of them. Aristotle is the one who used them the most: all his books are full of them, and there are some that are only pure logic. He presents and resolves all things through the use of these lovely words: *genus, species, act, potency, nature, form, faculties, qualities, cause in itself,* and *accidental cause*. His followers have trouble understanding that these words signify nothing, and that they are no more learned than before just because they are heard to say that fire dissolves metals because it has a dissolving faculty; and that man does not digest because he has a weak stomach or because his *digestive* faculty is not performing its functions well.

It is true that those who use only these general terms and ideas for explaining everything do not make as many mistakes as those who use terms that arouse only the confused ideas of sense. The Scholastic philosophers are not so subject to error as certain opinionated doctors who dogmatize and base systems on experiments whose explanations they do not understand, because the scholastics speak so generally that they do not risk very much.

Fire heats, dries, hardens, and softens because it has the faculty to produce these effects. Senna purges because of its purgative quality; bread even nourishes, if you will, through its nutritive quality: these propositions are not subject to error. A quality is why we call a thing by this or that name—one cannot deny Aristotle that—for in the end this definition is incontestable. These or similar ways of speaking are not false: it is just that in effect they mean nothing. These vague and indeterminate ideas do not involve one in error, but they are completely useless for discovering truth.

For even if you know that there is a substantial form in fire, accompanied by a million faculties similar to those for heating, dilating, and melting gold, silver, and all metals; for lighting, boiling, and cooking; <nevertheless> if you ask me to solve this difficulty—namely, can fire harden mud and soften wax?—the ideas of substantial forms and faculties for producing heat, rarefaction, fluidity, and so on, would be useless to me in discovering whether fire would be capable of hardening mud and softening wax, there being no connection whatsoever between the ideas of the hardness of mud and the softness of wax and the ideas of the substantial form of fire, and of the qualities of producing rarefaction, fluidity, and so on. It is the same with all general ideas. Thus, they are completely useless for resolving a single question.

But if you know that fire is nothing more than wood whose particles are in continual agitation, and that it is only through this agitation that it arouses the sensation of heat in us; if you know also that the softness of mud only consists in a mixture of earth and water: then as these ideas are not confused and general, but distinct and particular, it will not be difficult to see that the heat of fire must harden mud; because there is nothing easier to conceive than the fact that one body can move another if, being agitated, it collides with it. You can see with no difficulty that since the heat you feel near fire is caused by the motion of the invisible parts of wood striking against the hands, if you expose mud to the heat of fire, the particles of water that are in contact with the earth, being more loosened and consequently more agitated by the collision of the tiny bodies emitting from the fire than are the heavy particles of earth, they must be separated from it and hence leave it dry and hard. In the same way you will clearly see that fire must not harden wax, if you know that the particles composing it are twisted and of about the same bulk. Thus, particular ideas are useful in the search after truth; and not only are vague and indeterminate ideas incapable of being useful in that search, but on the contrary they insensibly involve us in error.

For philosophers are not content to use general terms and vague ideas that correspond to them; in addition they would have these terms signify certain particular beings. They claim that there is some substance distinguished from matter, which is the form of matter, as well as an infinity of lesser beings really distinguished from matter and form; and they normally posit as many of these as they have different sensations of bodies, and as they think there are different effects that these bodies produce.

Nevertheless, it is obvious to every man capable of any attention that all these lesser beings distinguished from fire, for example, that are supposedly contained in it to produce heat, light, hardness, fluidity, and so on, are only figments of the imagination that rebel against reason; for reason has no particular idea that represents these lesser beings. If we ask the philosophers what sort of entity is fire's illuminating faculty, they will answer only that it is the being that causes fire to be capable of producing light. So their idea of this faculty is no different from the general idea of cause and the confused idea of the effect they see. They therefore have no clear idea of what they are saying when they allow for these particular beings. Thus, they say what they do not even conceive, and even what is impossible to conceive.

BOOK SIX: PART TWO

Chapter Three

The most dangerous error of the philosophy of the ancients.

Not only do philosophers say what they do not conceive when they explain natural effects through certain beings of which they have not one single particular idea, they even furnish a principle from which one can directly infer very false and very dangerous conclusions.

For if we assume, in accordance with their opinion, that bodies have certain entities distinct from matter in them, then, having no distinct idea of these entities, we can easily imagine that they are the true or major causes of the effects we see. That is even the general opinion of ordinary philosophers; for it is mainly to explain these effects that they think there are substantial forms, real qualities, and other similar entities. If we next consider attentively our idea of cause or of power to act, we cannot doubt that this idea represents something divine. For the idea of a sovereign power is the idea of sovereign divinity, and the idea of a subordinate power is the idea of a lower divinity, but a genuine one, at least according to the pagans, assuming that it is the idea of a genuine power or cause. We therefore admit something divine in all the bodies around us when we posit forms, faculties, qualities, virtues, or real beings capable of producing certain effects through the force of their nature; and thus we insensibly adopt the opinion of the pagans because of our respect for their philosophy. It is true that faith corrects us; but perhaps it can be said in this connection that if the heart is Christian, the mind is basically pagan. Perhaps it will be said that substantial forms, those *plastic* forms, for example, that produce animals and plants, do not know what they are doing and that, thus lacking intelligence, they have no relation to the divinities of the pagans. But who will be able to believe that what produces works that manifest a wisdom that surpasses all philosophers produces them without intelligence?

Furthermore, it is difficult to be persuaded that we should neither fear nor love true powers—beings that can act upon us, punish us with pain, or reward us with pleasure. And as love and fear are true adoration, it is also difficult to be persuaded that we should not adore these beings. Everything that can act upon us as a true and real cause is necessarily above us, according to Saint Augustine and according to reason; and according to the same saint and the same reason, it is an immutable law that inferior things serve superior ones. It is for these reasons that this great saint recognizes[a] that the body cannot act upon the soul,[b] and that nothing can be above the soul except God.

In the Sacred Scriptures, when God proves to the Israelites that they must adore Him, i.e., that they must fear and love Him, the main reasons He gives are drawn from His power to reward and punish them. He shows them the benefits they have received from Him, the evils for which He chastised them, and that He still has the same power. He forbids them to adore the gods of the pagans because they have no power over them and can do them neither good nor evil. He wants them to honor only Him because He alone is the true cause of good and evil, and because nothing happens in their city, according to one prophet,[c] that He himself does not cause: because natural causes are not the true causes of the ill they appear to cause us, and because, as it is God alone who acts in them, it is He alone who must be feared, and who must be loved in them; "Soli Deo honor et gloria" [1 Tim. 1:17].

Finally, this opinion that we should love and fear what can be the true cause of good and evil appears so natural and right that it is impossible to disbelieve it. Hence, if we assume this false opinion of the philosophers, which we are here trying to destroy, that the bodies that surround us are the true causes of the pleasures and ills we feel, reason seems to some degree to justify a religion similar to that of the pagans, and to approve the universal disorder of morals.

It is true that reason does not teach that it is necessary to adore onions and leeks, for example, as the sovereign divinity, because they cannot make us completely happy when we have them, nor entirely unhappy when we do not. Also the pagans never gave them as much honor as they gave to the great Jupiter, on whom all their divinities depended, or as they gave to the sun, which our senses represent to us as the universal cause that gives life and motion to all things, and that we cannot help regarding as a divinity if we assume with the pagan philosophers that it encompasses in its being the true causes of everything it seems to produce, not only in our bodies and minds, but also in all the beings that surround us.

But if one should not render sovereign honor to leeks and onions, one can always render them some particular adoration; I mean, one can think of them and love them to some extent, if it is true that they can to some extent make us happy. We should render them honor in proportion to the good they can do. And certainly, men who heed the reports of their senses think these vegetables are capable of doing them good. The Israelites, for example, would not have missed them so much in the desert, they would not have considered themselves unhappy for want of them, had they imagined themselves in some way happy because of their enjoyment of them. Perhaps drunkards would not love wine so much if they were well aware of what it is, and that the pleasure they find in drinking it comes from the Almighty, who commands them to be temperate and whom they unjustly cause to serve their intemperance. Those are the disorders in which we involve reason itself when it is joined to the principles of pagan philosophy and when it follows the impressions of the senses.

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[a] "Ego enim ab anima hoc corpus animari non puto, nisi intentione facientis; nec ab isto quicquam illam pati arbitror, sed facere de illo et in illo, tamquam subjecto divinitus dominationis suae." 1. 6. *Mus.*C. 5.

[b] See chapter 34 of St. Augustine *De quantitate animae.*

[c] Amos, chs. 3, 6.

In order that we shall no longer be able to doubt the falseness of this detestable philosophy and shall clearly recognize the soundness of the principles and the distinctness of the ideas being used, it is necessary clearly to establish the truths that are opposed to the errors of the ancient philosopher, and to prove in few words that there is only one true cause because there is only one true God; that the nature or power of each thing is nothing but the will of God; that all natural causes are not *true* causes but only *occasional* causes, and certain other truths that will follow from these.

It is clear that no body, large or small, has the power to move itself. A mountain, a house, a rock, a grain of sand, in short, the tiniest or largest body conceivable does not have the power to move itself. We have only two sorts of ideas, ideas of minds and ideas of bodies; and as we should speak only of what we conceive, we should only reason according to these two kinds of ideas. Thus, since the idea we have of all bodies makes us aware that they cannot move themselves, it must be concluded that it is minds which move them.[a] But when we examine our idea of all finite minds, we do not see any necessary connection between their will and the motion of any body whatsoever. On the contrary, we see that there is none and that there can be none. We must therefore also conclude, if we wish to reason according to our lights, that there is absolutely no mind created that can move a body as a true or principal cause, just as it has been said that no body could move itself.

But when one thinks about the idea of God, i.e., of an infinitely perfect and consequently all-powerful being, one knows there is such a connection between His will and the motion of all bodies, that it is impossible to conceive that He wills a body to be moved and that this body not be moved. We must therefore say that only His will can move bodies if we wish to state things as we conceive them and not as we sense them. The motor force of bodies is therefore not in the bodies that are moved, for this motor force is nothing other than the will of God. Thus, bodies have no action; and when a ball that is moved collides with and moves another, it communicates to it nothing of its own, for it does not itself have the force it communicates to it. Nevertheless, a ball is the natural cause of the motion it communicates. A natural cause is therefore not a real and true but only an occasional cause, which determines the Author of nature to act in such and such a manner in such and such a situation.

It is certain that all things are produced through the motion of either visible or invisible bodies, for experience teaches us that bodies whose parts have more motion are always those that act more and produce more change in the world. All natural forces are therefore nothing but the will of God, which is always efficacious. God created the world because He willed it: "Dixit, & facta sunt" [Ps. 32:9]; and He moves all things, and thus produces all the effects that we see happening, because He also willed certain laws according to which motion is communicated upon the collison of bodies; and because these laws are efficacious, they act, whereas bodies cannot act. There are therefore no forces, powers, or true causes in the material, sensible world; and it is not necessary to admit the existence of forms, faculties, and real qualities for producing effects that bodies do not produce and for sharing with God the force and power essential to Him.

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[a] See the seventh *Dialogue on Metaphysics* and the fifth of the *Christian Meditations* [3–9 and 14–18].

But not only are bodies incapable of being the true causes of whatever exists: the most noble minds are in a similar state of impotence. They can know nothing unless God enlightens them. They can sense nothing unless God modifies them. They are incapable of willing anything unless God moves them toward good in general, i.e., toward Himself. They can determine the impression God gives them toward Himself toward objects other than Himself, I admit; but I do not know if that can be called power. If the ability to sin is a power, it will be a power that the Almighty does not have, Saint Augustine says somewhere. If men held, of themselves, the power to love the good, we could say they had some power; but men can only love because God wills them to and because His will is efficacious. Men can only love because God incessantly pushes them toward the good in general, i.e., toward Himself; for God having created them only for Himself, He never preserves them without turning and pushing them toward Himself. It is not they who move themselves toward the good in general, it is God who moves them. They merely follow this impression through an entirely free choice according to the law of God, or they determine it toward false goods, according to the law of the flesh; but they can determine it only through the perception of good, for, being capable only of what God makes them do, they can love only the good.

But were one to assume what is in one sense true, that minds have in themselves the power to know truth and to love good, still, if their thoughts and wills produced nothing externally, one could always say that they are capable of nothing. Now it appears to me quite certain that the will of minds is incapable of moving the smallest body in the world; for it is clear that there is no necessary connection between our will to move our arms, for example, and the movement of our arms. It is true that they are moved when we will it, and that thus we are the natural cause of the movement of our arms. But *natural* causes are not true causes; they are only *occasional* causes that act only through the force and efficacy of the will of God, as I have just explained.

For how could we move our arms? To move them, it is necessary to have animal spirits, to send them through certain nerves toward certain muscles in order to inflate and contract them, for it is thus that the arm attached to them is moved; or according to the opinion of some others, it is still not known how that happens. And we see that men who do not know that they have spirits, nerves, and muscles move their arms, and even move them with more skill and ease than those who know anatomy best. Therefore, men will to move their arms, and only God is able and knows how to move them. If a man cannot turn a tower upside down, at least he knows what must be done to do so; but there is no man who knows what must be done to move one of his fingers by means of animal spirits. How, then, could men move their arms? These things seem obvious to me and, it seems to me, to all those willing to think, although they are perhaps incomprehensible to all those willing only to sense.

But not only are men not the true causes of the movements they produce in their bodies, there even seems to be some contradiction (in saying) that they could be. A true cause as I understand it is one such that the mind perceives a necessary connection between it and its effect. Now the mind perceives a necessary connection only between the will of an infinitely perfect being and its effects. Therefore, it is only God who is the true cause and who truly has the power to move bodies. I say further (a) that it is inconceivable that God could communicate His power to move bodies to men or angels, and (b) that those who claim that our power to move our arms is a true power should admit that God can also give to minds the power to create, annihilate, and to do all possible things; in short, that He can render them omnipotent, as I shall show.

God needs no instruments to act; it suffices that He wills[a] in order that a thing be, because it is a contradiction that He should will and that what He wills should not happen. Therefore, His power is His will, and to communicate His power is to communicate the efficacy of His will. But to communicate this efficacy to a man or an angel signifies nothing other than to will that when a man or an angel shall will this or that body to be moved it will actually be moved. Now in this case, I see two wills concurring when an angel moves a body; that of God and that of the angel; and in order to know which of the two is the true cause of the movement of this body, it is necessary to know which one is efficacious. There is a necessary connection between the will of God and the thing He wills. God wills in this case that, when an angel wills this or that body be moved, it will be moved. Therefore, there is a necessary connection between the will of God and the movement of the body; and consequently it is God who is the true cause of its movement, whereas the will of the angel is only the occasional cause.

But to show this still more clearly, let us suppose that God wills to produce the opposite of what some minds will, as might be thought in the case of demons or some other minds that deserve this punishment. One could not say in this case that God would communicate His power to them, since they could do nothing they willed to do. Nevertheless, the wills of these minds would be the natural causes of the effects produced. Such bodies would be moved to the right only because these minds willed them moved to the left; and the volitions of these minds would determine the will of God to act, as our willing to move the parts of our bodies determines the first cause to move them. Thus, all the volitions of minds are only occasional causes.

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[a] It is clear that I am speaking here about practical volitions, or those God has when He wills to act.

But if after all these arguments someone still wishes to maintain that the will of an angel who moved a body would be a true and not an occasional cause, it is clear that this same angel could be the true cause of the creation and annihilation of all things. For God could communicate to him His power to create and annihilate bodies, as <He does> the power to move them, if He willed all things to be created and annihilated, in a word if He willed all things to happen as the angel would will, just as He willed bodies to be moved as the angel would will. Therefore, if someone claims that an angel and a man are true movers because God moves bodies when they will it, they must also say that a man and an angel can truly be creators, since God could create beings when they would will it. Perhaps one could even say that the most vile animals, or matter all by itself, would effectively cause the creation of some substance, if one assumed as do the philosophers[a] that God produced substantial forms when required by matter. Finally, because God resolved from all eternity to create certain things in a certain time, one could also say that these times would be the causes of the creation of these beings; just as one claims that a ball that collides with another is the true cause of the movement it communicates to it, because God willed through His general will, which causes the order of nature, that when two bodies collide, such a communication of motion occurs.

There is therefore only one single true God and one single cause that is truly a cause, and one should not imagine that what precedes an effect is its true cause. God cannot even communicate His power to creatures, if we follow the lights of reason; He cannot make true causes of them, He cannot make them gods. But even if He could, we cannot conceive why He would. Bodies, minds, pure intelligences, all these can do nothing. It is He who made minds, who enlightens and activates them. It is He who created the sky and the earth, and who regulates their motions. In short, it is the Author of our being who executes our wills: *semel jussit, semper paret*. He moves our arms even when we use them against His orders; for He complains through His prophet[b] that we make Him serve our unjust and criminal desires.

All these insignificant pagan divinities and all these particular causes of the philosophers are merely chimeras that the wicked mind tries to establish to undermine worship of the true God in order to occupy the minds and hearts that the Creator has made only for Himself. It is not the philosophy received from Adam that teaches these things; it is that received from the serpent; for since Original Sin, the mind of man is quite pagan. It is this philosophy that, together with the errors of the senses, made men adore the sun, and that today is still the universal cause of the disorder of men's minds and the corruption of men's hearts. Their actions and sometimes even their words ask why we should not love the body, since bodies are capable of gorging us with pleasure. And why do people mock the Israelites who longed for the cabbages and onions of Egypt, since they were actually unhappy being deprived of something that could make

[a] See the Elucidation on the efficacy of secondary causes [15], *Dialogues on Metaphysics*, seventh Dialogue.

[b] Isa. 43:24.

them to some extent happy. But the philosophy that is called new, which is represented as a specter to frighten feeble minds, which is scorned and condemned without being understood, the new philosophy, I say (since it is the fashion to call it thus), ruins all the arguments of the skeptics through the establishment of the greatest of its principles, which is in perfect harmony with the first[a] principle of the Christian religion: that we must love and fear only one God, since there is only one God who can make us happy.

For if religion teaches us that there is only one true God, this philosophy shows us that there is only one true cause. If religion teaches us that all the divinities of paganism are merely stones and metals without life or motion, this philosophy also reveals to us that all secondary causes, or all the divinities of philosophy, are merely matter and inefficacious wills. Finally, if religion teaches us that we must not genuflect before false gods, this philosophy also teaches us that our imaginations and minds must not bow before the imaginary greatness and power of causes that are not causes at all; that we must neither love nor fear them; that we must not be concerned with them; that we must think only of God alone, see God in all things, fear and love God in all things.

But that is not the inclination of some philosophers. They do not want to see God, they do not want to think about God; for since sin there is a secret opposition between man and God. They take pleasure in fabricating gods at their whim, and they willingly love and fear the figments of their imaginations, as the pagans do the works of their hands. They are like children who tremble before their companions after they have painted their faces. Or if one wishes a more noble comparison, although perhaps not as accurate, they resemble those famous Romans who had fear and respect for the figments of the imagination, and who foolishly worshiped their emperors after they had released the eagle at their apotheoses.

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[a] Haec est religio Christiana, fratres mei, quae praedicatur per universum mundum horrentibus inimicis, et ubi vincuntur murmurantibus, ubi praevalent savientibus, haec est religio Christiana ut *COLTUR UNUS DEUS NON MULTI DII, QUIA NON FACIT ANIMAM BEATAM NISI UNUS DEUS*." Aug. *Tract.* 23 on St. John [C. 5].

BOOK SIX: PART TWO

Chapter Four

An explanation of the second part of the general rule. That philosophers almost never observe it, and that Descartes tried to observe it precisely in his physics, as is proved through the summary of it given here.

I have just shown what errors we can make when we reason on the basis of the false and confused ideas of the senses and the vague and indeterminate ideas of pure logic. As a result, it is fairly easy to see that, to keep our perceptions clear, it is absolutely necessary to observe exactly the rule we have just prescribed, and to study which ideas are the clear and distinct ideas of things, in order to reason only according to these ideas.

In this same general rule regarding the subject of our studies, there is still this circumstance to note well, namely, that we must always begin with the simplest and easiest things, and dwell on that point, if necessary even for quite a while, before undertaking the search for more complex and difficult ones. For if we must reason only on the basis of clear and distinct ideas in order to keep our perceptions clear, it is clear that we must never go on to the search for complex things before having very carefully examined, and become quite familiar with, the simple ones on which they depend. For ideas of complex things are not clear, and cannot be when our knowledge of the simple ones composing them is confused and imperfect.

We know things imperfectly when we are not sure that we have considered all their parts; and we know them confusedly when they are not sufficiently familiar to the mind, even if we are sure we have considered all their parts. When things are known only imperfectly, we can offer only probable explanations. When we perceive things confusedly, there is neither order nor light in our deductions; often we know neither where we are nor where we are going. But when we know things imperfectly and confusedly at the same time, which is most common, we never clearly know what we are seeking nor the means for finding it. Hence it is absolutely necessary to preserve this order inviolably in one's studies: *always begin with the simplest things, examine all their parts, and become familiar with them before going on to the more complex ones upon which they depend.*

But this rule does not correspond to men's inclinations. They have a natural scorn for everything that appears easy, and their minds, which are not made for a limited object that is easy to understand, cannot long dwell on consideration of these simple ideas, which do not have the character of the infinite, for the consideration of which they are made. They have, on the contrary, and for the same reason, great respect and eagerness for great things that concern the infinite, and even for those that are obscure and mysterious. It is not basically that they love darkness; it is just that they hope to find there the good that they desire, and that in broad daylight they realize that it is not to be found here below.

Vanity also significantly disturbs minds, throwing them from the outset into the great and extraordinary, and the foolish hope of success keeps them there. Experience teaches that the most exact knowledge of ordinary things gives no reputation in the world, and that knowledge of uncommon things, as confused and imperfect as it may be, always attracts the esteem and respect of those who willingly form a lofty idea of what they do not understand. And this experience determines all those who are more sensitive to vanity than to truth, and consequently most men, to a blind search for these specious and imaginary bits of knowledge of all that is great, rare, and obscure.

How many people reject Descartes's philosophy for the ridiculous reason that its principles are too simple and easy! There are no obscure, mysterious terms in this philosophy; women and people who know neither Greek nor Latin can learn it; therefore, it must be something insignificant, and inappropriate for great geniuses to apply themselves to it. They imagine that such clear and simple principles are insufficiently fecund to explain natural effects, which they assume to be obscure and perplexing. They do not immediately see the use of these principles, which are too simple and easy to attract their attention for the time it takes to recognize their use and scope. They therefore prefer to explain effects whose causes they do not understand by principles they do not conceive and that are absolutely inconceivable rather than by principles at once both simple and intelligible. For these philosophers explain obscure things through principles that are not only obscure but entirely incomprehensible.

When some people claim to explain extremely confusing things through principles that are clear and known by everyone, it is easy to see whether they succeed, because if we clearly conceive what they say, we can recognize whether they speak the truth. Thus, false scholars do not find it to their advantage and are not admired as they wish when they use intelligible principles, because we clearly recognize that they are saying nothing true. But when they use unknown principles and speak of very complex things, as though they had an exact knowledge of all their relations, they are admired, because people do not conceive what they are saying, and we naturally respect what surpasses our intelligence.

Now, as obscure and incomprehensible things seem to be better connected to each other than obscure things to those that are clear and intelligible, incomprehensible principles are more useful in very complex questions than intelligible principles. There is nothing so difficult that philosophers and physicians do not claim to explain it in few words by their principles; for since their principles are still more incomprehensible than all the questions we can solve by them, when we assume these principles to be certain, no problem can embarrass them.

For example, they respond boldly and without hesitation to these obscure or indeterminate questions: Why does the sun attract vapors, quinquina arrest sleeping sickness, rhubarb purge bile, and polychrestral salts cure phlegm? and to other such questions. And the majority of men are sufficiently satisfied with their responses, because the obscure and the incomprehensible adapt well to each other. But incomprehensible principles are not easily adapted to clearly exposed and easily resolved questions, because we clearly recognize that they signify nothing. Philosophers cannot, through their principles, explain how horses pull a chariot; how dust stops a watch; how tripoli cleans metals, and brushes clean clothing. For they would make themselves ridiculous to everyone if they assumed (the existence of) a motion of attraction and *attractive* faculties to explain why chariots follow the horses to which they are harnessed, and a *detersive* faculty in brushes to clean clothing, and so on with other questions. Thus, their great principles are useful only for obscure questions because they are incomprehensible.

Therefore, we need not dwell on any one of all these principles that no one knows clearly and evidently and that, one may think, are not accepted by some nations. It is necessary to consider our ideas of extension, figure, and locomotion, and the relations between these things. If we distinctly conceive these ideas and find them so clear that we are convinced that all nations in all times have accepted them, then it is necessary to pause there and examine all their relations; but if we find them obscure, we must look for others if they can be found. For if it is necessary always to keep our perceptions clear in order to reason without fear of being mistaken, then we must reason only on clear ideas and their clearly known relations.

To consider the properties of extension in an orderly way, it is necessary to begin, as Descartes did, with their simplest relations and to go from the simple to the more complex ones, not only because this method is natural and helps the mind in these operations, but also because as God always acts with order and in the simplest ways, this method of examining our ideas will make us better understand His works. And if we consider that the simplest relations are always the first to be presented to the imagination when it is not determined to think of one thing rather than another, we shall recognize that to regard things with attention and without preoccupation is sufficient for adopting this orderly method that we prescribe, and for discovering very complex truths, provided we do not wish to rush from one subject to another too quickly.

If we consider extension attentively then, and without any prejudice, we will see first of all that it is impenetrable, for it is contradictory to say that two feet of extension make only one. But as we see no force whatever in the idea that represents it, it is certainly not hard in itself, and hence each part must be separated from its neighbor if they are pushed from different sides. Thus, we conceive that motion is possible, even though there is no void and bodies are impenetrable, because extension not being hard in itself, when one part advances, the others, since there is no void, will be pushed toward the place it leaves in advancing, thus slipping in and so producing a circular motion. But if we conceive an infinity of rectilinear motions in an infinity of similar parts of this immense extension we are considering, it is still necessary for all these bodies that obstruct one another to tend by their mutual action and reaction, I mean the mutual communication of all their particular motions, to move with a circular motion.

This initial consideration of the simplest relations of our ideas already causes us to recognize the necessity of Descartes's vortexes; that their number will increase in proportion as the rectilinear motions of all the parts of extension, having been more opposed to each other, will have had greater difficulty accommodating the same motion; that of all these vortexes, the largest will be those wherein more parts have tended toward the same motion, or whose parts have had more power to continue their rectilinear motion.

But we must be careful not to dissipate or tire the mind by uselessly applying it to the infinite number and immense size of the vortexes. It is first necessary to dwell for a while on one of these vortexes, to search out with order and concentration all the motions of the matter it contains, and all the figures with which all the parts of this matter should be invested.

As only rectilinear motion is simple, it must first be considered as the one with which all bodies tend to move, since God always acts in the simplest ways, and since in effect bodies move circularly only because they encounter constant resistance in their rectilinear movements. Hence, since bodies are not all the same size, and since the largest ones have more power to continue their rectilinear motion than the others, we can easily conceive that the tiniest of all bodies must be found toward the center of the vortex and the largest toward the circumference, since the lines we conceive to be described by the movements of the bodies at the circumference more nearly approach the straight than those described by the bodies near the center.

If we consider once more that each part of this matter could not be moved at first without finding some constant opposition to its movement, unless it rounded off and broke its corners, we will easily recognize that this whole extension will still be composed of only two kinds of bodies: round balls[a] that constantly revolve on their centers in several different ways and that, beyond their particular motion, are also carried by the common motion of the vortex; and a very fluid and highly agitated matter, generated by the crumpling of the balls of which we have just spoken. In addition to the circular motion common to all parts of the vortex, this subtle matter will also have a particular motion, almost rectilinear, from the center of the vortex toward the circumference, through the intervals between the balls that allow them free passage, so that their motion, composed of these motions, will be in a spiral line. Since this fluid matter, which Descartes calls the *first element*, is divided into much smaller parts that have much less power to continue their rectilinear motion than do the balls, or the *second element*, it is clear that this first element must be in the center of the vortex and in the intervals between the parts of the second, and that the parts of the second must fill the rest of the vortex and tend toward its circumference in proportion to their bulk or strength to continue their rectilinear motion. As for the shape of the entire vortex, it cannot be doubted, from what has just been said, that the distance from one pole to the other is smaller than the line traversing the equator.[a] And if we consider that the vortexes enclose one another, and press unevenly upon each other, we will also clearly see that their equator is a curved, irregular line that may approach an ellipse.

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[a] Descartes believes that these tiny balls are solid, but, in fact, they are tiny vortexes of a fluid material, as I shall say in the Elucidation on light and colors. My intention here is only to give some idea of Descartes's system.

These are the things that naturally present themselves to the mind when we carefully consider what must happen to the parts of extension, which constantly tend to move in a straight line; i.e., with the simplest of all motions. Now suppose we wish to assume something that seems very worthy of the wisdom and power of God, namely, that He formed the entire universe instantaneously, and in the same state in which its parts would have been arranged through time, by the simplest means; and that He also preserves these parts through the same natural laws. In short, if we wish to compare our ideas to the objects we see, we will be able to judge: that the sun is the center of the vortex; that the corporeal light it dispenses in all directions is nothing but the continual effort of the tiny balls, which tend to recede from the center of the vortex; and that this light must be transmitted instantaneously through immense spaces because, since all space is full of these balls, one cannot be pressed without all the others next to it being pressed.

Several other results are deducible from what I have just said, for the simplest principles are the most fruitful for explaining the works of Him who always acts in the simplest ways. But we still need to consider certain things that must happen to matter. We should therefore consider that there are several vortexes similar to the one we have just briefly described; that the centers of these vortexes are the stars, which are so many suns; that the vortexes surround each other, and that they are arranged in such a way that they hinder each other as little as possible in their movements; but that things could not have happened this way unless the weakest vortexes had been carried away and, as it were, absorbed by the strongest.

To understand this, we have only to consider that the first element, which is in the center of the vortex, can and does escape constantly through the intervals between the balls toward the circumference of the same vortex; and while this center or this star is being emptied through its equator, other of the first element must enter at its poles; for this star cannot be emptied from one side without being filled from the other, since there is no void in the world, as I assume here and which is easy to prove through natural effects, i.e., through the transmission of light. But as there may be an infinity of causes that can prevent very much of the first element from entering this star of which we are speaking, it is necessary for the parts of the first element that are forced to stay there to adapt themselves to move in a single direction, which is how they become attached and bound to each other, and form spots that, thickening into crusts, gradually cover the center and turn the most subtle and agitated of all bodies into solid, gross matter. It is this gross matter that Descartes calls the *third element*; and it is necessary to note that, since it is engendered by the first, whose figures are infinite, it must be arrayed with an infinity of different forms.

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[a] By *equator* I mean the largest curved line described by the matter of the vortex.

This star, thus covered with spots and crusts, and having become like other planets, no longer has the strength to sustain and defend its vortex against the constant effort of those around it. This vortex therefore gradually diminishes. The matter that composes it is dispersed in all directions, and the strongest of the neighboring vortexes carries away the largest part of it and finally envelops the planet that is its center. The planet, finding itself completely surrounded by the matter of this large vortex, floats there, preserving its former circular motion with a small amount of the matter of its own vortex, and it finally takes a position that puts it in equilibrium with an equal volume of the matter in which it floats. If it has little solidity and size, it descends very close to the center of the vortex that has surrounded it because, having little strength to continue its rectilinear motion, it must place itself in the part of this vortex where an equal volume of the second element has as much strength as it does, to withdraw from the center; for it can be at equilibrium only in this part. If this planet is larger and more solid, it must find its equilibrium some place farther from the center of the vortex. And finally if there is no place in the vortex where an equal volume of its matter has as much solidity as this planet, and consequently as much strength to continue its rectilinear motion (perhaps because this planet might be very large and covered with very solid and thick crusts), it will not be able to stop in this vortex, since it will not be able to put itself in equilibrium with the matter composing the vortex. This planet will therefore pass into other vortexes; and if it does not find its equilibrium there, it will not stop there either. So it may occasionally be seen passing like a comet when it is in our vortex, and close enough to us for viewing; and it will not be seen for a long time when it is in the other vortexes or at the extremity of ours.

If we now consider that a single vortex, through its size, strength, and advantageous situation, can gradually consume, envelop, and finally carry away several other vortexes, even vortexes that have themselves overwhelmed several others in the same way, then it will be necessary for the planets made in the centers of these vortexes, having entered into the large vortex that has overcome them, to place themselves in equilibrium there with an equal volume of the matter in which they float. So that if these planets are of unequal solidity, they will be located at unequal distances from the center of the vortex in which they float. And if it happens that two planets have approximately the same strength to continue their rectilinear motion, or that one planet carries away one or several other smaller planets in its small vortex, which it will have overcome according to our manner of conceiving the formation of things, then these small planets will revolve around the largest, while the largest will turn on its center; and all these planets will be carried around by the motion of the large vortex at almost equal distances from its center.

If we are to follow the lights of reason, then we are obliged to arrange the parts of the world, which we imagine to have been formed in the simplest ways, in just this way. For everything that has just been said rests only on our idea of extension, whose parts supposedly tend to move with the simplest motion, which is rectilinear motion. And when we investigate through effects, if we do not err in wanting to explain things by their causes, we are surprised to see that the phenomena of the heavenly bodies are in rather close harmony with what has just been stated. For we see that all the planets in the middle of a small vortex turn on their own centers like the sun; that they all float around the sun in its vortex; that the smallest or least solid are closest to the sun and the most solid are most remote; and there are also some that, like comets, cannot remain in the vortex of the sun. Finally, we see that several planets also have several other small ones revolving around them, like the moon around the earth. Jupiter has four and Saturn five, and Saturn is also the largest according to some astronomers. But if it is not, then at least it must be the most solid. It is even possible that Saturn has such a large number of tiny satellites that they have the same effect as a continuous circle, which appears to have no thickness because of its great remoteness. These planets (being the largest we see) can be considered as having been generated from vortexes large enough to have overcome others before having been enveloped by the vortex we are in. Huygens[a] says that the diameter of Saturn's ring is to that of the sun as 11 is to 37, that of its globe as 5 to 37, that of Jupiter as 2 to 11, of Mars as 1 to 166, of earth as 1 to 111, of Venus as 1 to 84, and that of Mercury as 1 to 290. As for Saturn's year, or its revolution around the sun, it is 29 years, 174 days, and 5 hours; Jupiter's is 11 years, 317 days, 15 hours; that of Mars, quite close to 687 days, earth's 365¼ days; that of Venus, 224 days, 18 hours; and Mercury's is 88 days.

All these planets rotate on their centers: the Earth in 24 hours, Mars in about 25, Jupiter in approximately 10; but the moon makes its trip around its center only once a month, since it always faces the same way. All the matter in which they float revolves more quickly when it is closer to the sun or to the center of its vortex because the line of its motion is shorter. Astronomers, following Kepler, today hold[b] that the cubes of the distance between each planet and the center of its revolution stand to each other as the squares of the times of their revolutions, which also holds for the satellites of Jupiter and Saturn. When Mars is in opposition to the sun, it is fairly close to the earth; and it is extremely far from it when in conjunction with the sun. The same is true of the superior planets, Jupiter and Saturn; for the inferior ones, like Mercury and Venus, are never in opposition to the sun, properly speaking. The lines that all the planets seem to describe around the earth are not circles but almost ellipses; and all these ellipses appear quite different because of the different positions of the planets in relation to us. In short, everything we observe with certitude in the skies concerning the motion of the planets is in rather close accord with what has just been said about their being formed in the simplest ways.

There are many people who regard Descartes's vortexes as pure chimeras. Nevertheless, nothing is easier to demonstrate by assuming: first, that every

[a] *Cosmotheoros,* p. 14.

[b] *Cosmotheoros,* p. 105.

moved body tends to move in a straight line, and second, that the planets have circular movements, two truths certain by experience. For it is clear that if Jupiter, for example, moved in a void, it would always travel in a straight line; and that if it moved in matter that did not form a vortex or that did not revolve around the sun, not only would it still continue to go in a straight line or at least a spiral one but it would gradually lose its motion by communicating it to the fluid it would displace. It is therefore necessary that celestial matter form a vortex and that each planet be so situated in it that its effort to recede from the sun balances the effort of an equal volume of this matter.

As for the fixed stars, experience teaches that there are some that diminish and disappear entirely, and also some that seem completely new and whose brilliance and size greatly increase. They increase and diminish as the vortexes of which they are centers receive more or less of the first element. They become invisible when spots and crusts are formed on them, and we begin to notice them when these spots, which diminish their brilliance, have completely dissipated. These stars always maintain the same distance between them, since they are the centers of vortexes, and they are not carried away so long as they resist other vortexes or remain stars. They are brilliant like small suns because they, like the sun, are the centers of vortexes that have not yet been overcome. They are at different distances from the earth, although they appear to the eye as though attached to a vault; for if we have not yet observed the parallax of the closest ones with the most remote, in virtue of the different position of the earth every six months, it is because this difference of position is not great enough, because of the immense distance separating us from the stars, to make this parallax perceptible. Perhaps by means of telescopes we will be able to notice it somewhat. In short, nothing observable in the stars through the senses and by experiment, seems different from what has just been disclosed by the mind in examining the simplest and most natural relations found between the parts and the motions of extension.

If we wish to examine the nature of bodies here below, it must first of all be noted that since the first element is composed of an infinite number of different figures, bodies formed by the assemblage of parts of this element will be of several sorts. There will be some whose parts will be branched; others whose parts will be long; and others whose parts will be rather round, but irregular in every way. If their branched parts are gross enough, they will be hard, but flexible, and inelastic, like gold; if their parts are less gross, bulky, they will be soft or fluid, like gums, fats, and oils. But if their branched parts are extremely delicate, they will be like air. If the long parts of bodies are gross, bulky, and inflexible, they will be sharp, incorruptible, easy to dissolve, like salts. If these same long parts are flexible, they will be insipid like waters. If the bodies have parts that are gross and irregular in every way, they will be like earth and stones. In short, there will be bodies of several different natures, and no two will be completely alike, because the first element is capable of an infinity of figures, and all these figures will never be combined in the same manner in two different bodies. Whatever figures these bodies have, if their pores are large enough to allow passage to the second element in every direction, they will be transparent, like air, water, glass, and so on. Whatever figures these bodies may have, if the first element completely surrounds some of their parts and agitates them strongly and swiftly enough to resist the second element on every side, they will be luminous, like flame. If these bodies repulse all of the second element[a] that strikes them, they will be completely white; if they admit it with no resistance, they will be quite black; and finally, if they repel it through various bumps or vibrations, they will appear to be of different colors.

As for their position, the heaviest or the least light, i.e., those that have less strength for continuing their rectilinear motion, will be closest to the center, like metals. Earth, water, and air will be more remote from the center, and all bodies will remain where we see them because they must be placed further from the center of the earth as they have more motion to recede from it.

And you should not be surprised if I now say that metals actually have less force for continuing their rectilinear motion than do earth, water, and other bodies even less solid, although I said previously that the most solid bodies have more force to continue their rectilinear motion than others do. For the reason metals have less force to continue their motion than do earth and rocks is that metals have much less motion, since it is always true that, two bodies of unequal solidity being moved at an equal speed, the more solid has more force to go in a straight line because then the more solid has more motion, and it is motion that makes force.

And if we wish to know the explanation of why gross bodies are heavy toward the centers of vortexes and light when they are far removed from the center—for example, if the earth were closer to the sun, it would recede to where it now is—we must consider that heavy bodies receive their motion from the subtle matter that surrounds them and in which they float. Now this subtle matter actually moves in a circle around the center of the vortex, and it is this motion, common to all its parts, that it communicates to the gross bulky bodies it surrounds. But it cannot communicate to them the movements particular to each part that tends in a different direction, while nevertheless receding from the center of the vortex. For we must note that the parts of the subtle matter, exerting effort in different directions, can only compress the gross body they transport; for this body cannot go in different directions at the same time. But because the subtle matter toward the center of the vortex has much more motion than it uses to rotate; because it communicates to the gross bodies it transports only its circular motion, common to all its parts; and because if the gross bodies had motion in addition to that which they have in common with the vortex, they would soon lose it by communicating it to the tiny bodies with which they collide. From this it is clear that the gross bodies toward the center of the vortex do not have as much motion as the matter in which they float, whose every part moves in several different ways besides their circular, common motion. And it is this motion, in directions different from the circular, common one, that makes the subtle matter lighter than the gross bodies whose parts are, as it were, at rest alongside each other. When dust is disturbed, it becomes light because it has more freedom to fulfill its upward than its downward motion, whose resistance and reaction are greater. Hence gross bodies, having only the circular motion common to the entire earth, are forced to yield, and consequently to approach the center of the vortex, i.e., they become heavier as they become more solid. I explain the cause of weight more precisely toward the end of the penultimate [16] elucidation. My purpose here is to give only a summary of Descartes's physics.

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[a] See the sixteenth Elucidation on this point at the end of this work.

But when gross bodies are very remote from the center of the vortex, since the circular motion of the subtle matter is then very great (because it uses nearly all its motion to rotate about the center of the vortex), the more solid these bodies are, the more motion they have, since they travel at roughly the same speed as the subtle matter in which they float. Thus, they have more strength to continue their rectilinear motion. Thus, gross bodies, at a certain distance from the center of the vortex, are lighter to the extent that they are more solid.

This, then, shows that the earth is metallic toward its center, that it is not very solid toward its circumference, and that water and air must remain where we see them; but that all these bodies have weight,[a] air as well as gold or quicksilver, because they are more solid and more gross than the first and second elements. This shows that the moon, although solid, is a bit too far removed from the center of the earth's vortex to have weight; that Mercury, Venus, the earth, Mars, Jupiter, and Saturn cannot fall into the sun, and that they are not solid enough to leave their vortex like comets; that they are in equilibrium with the matter in which they float; and that if a musket ball or a cannon bullet could be thrown high enough, these two bodies would become tiny planets, or they would be sufficiently solid to become like tiny comets that could no longer be arrested in the vortexes.

I do not claim to have sufficiently explained everything that I have just said, or to have deduced from the simple principles of extension, figure, and motion everything that can be derived from them. I only want to show the manner in which Descartes undertook to discover natural things, in order that we may be able to compare his ideas and method with those of other philosophers. I had no other aim here. But I am not afraid to assert that if you wish to cease admiring the power of the magnet, the controlled movements of the ebb and flow of the sea, the noise of thunder, the generation of meteors, in short, if you want to be basically instructed in physics, which can be done in no better way than to read and to meditate upon his works, you would not know how to do anything unless you followed his method, that is, unless you reasoned as he does on the basis of clear ideas, always beginning with the simplest ones.

It is not that this author is infallible, and indeed I think I can demonstrate that he is mistaken in several places in his works. But it is more advantageous to those who read him to believe that he is mistaken than to be persuaded that everything he says is true. If we believed him to be infallible, we would read him without studying him; we would believe what he said without understanding it; we would learn his views as we learn histories, which would not form the mind. He himself warns that in reading his works we must take care that he is not mistaken, and we must believe nothing he says unless we are obliged to do so by the evidence. For he bears no resemblance to those false scholars who, usurping an unjustified domination over minds, want everyone to take them at their word, and who, instead of making men into disciples of internal truth by proposing only clear ideas to them, subject them to the authority of pagans and, through arguments they do not understand, force them into views they cannot comprehend.

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[a] That is to say, they are pressed toward the center of the earth.

It must be noted that in Descartes's time people had not discovered the secret of *centrifugal* forces, and it was not yet known how to measure their relations, which is nevertheless necessary to perfect celestial physics. But aside from that he was ignorant of what we have learned from the latest observations. If he had only been convinced of what skillful astronomers agree upon today, namely, that the cubes of the distances of celestial bodies from the centers of their rotation stand to each other as the squares of the periods of their revolutions; and had he known that centrifugal forces stand to each other as the squares of their speeds divided by the diameter of their revolution, it would have been easy for him to correct certain parts of his physics, and to make it more perfect. For by calculating their value, for example, by the preceding ratio, rather than by their periods, i.e., the distances transversed or the revolutions divided by their speeds, he would have discovered a natural explanation of the equilibrium of the celestial matter and the relations between the speeds and distances of the planets that it transports while rotating. He would also have drawn many conclusions from the knowledge of *centrifugal* forces that can be seen in works that appeared some years ago. Descartes was not given to us by God to teach us everything that can possibly be known, as Averroes says of Aristotle. He is often even mistaken, not by fault of his method or the falsity of his principles (for he assumes nothing but common notions and clear ideas), but because of the difficulty of following them in the study of subjects that are too complex.

The principal criticism of the way Descartes explains the origin of the sun, stars, earth, and all the bodies around us, is that it appears to be contrary to what Sacred Scripture teaches us about the creation of the world; and that, if we believe this author on that subject, it seems the universe was formed as it were by itself, just as we see it today. Several replies can be given to this.

The first reply is that those who say Descartes is contrary to Moses, may not have examined Sacred Scripture and Descartes as well as those who have written to prove that the creation of the world is perfectly consistent with the views of this philosopher.

But the major reply is that Descartes never claimed that things were made by degrees as he describes them. For in the first article of the fourth part of his philosophy, which is *That in order to find the true causes of what exists on the earth, we must retain the hypothesis that is already accepted, even if it be false*, he positively states the contrary in these terms:

> Although I do not wish to persuade anyone that the bodies that make up the visible world were ever produced in the manner I have described, as I have advised above, I

> am nevertheless obliged here to retain the same hypothesis in order to explain what exists on the earth, so that if I clearly show, as I hope to do, that we can by this means provide quite intelligible and certain explanations of all the things observed there, and that we cannot do the same thing in any other way, we have reason to conclude that although in the beginning the world was not made in this way but had been immediately created by God, all the things it contains would nevertheless now be of the same nature as if they had been so produced.

Descartes knew that, in order to understand the nature of things, they must be considered in their origin and birth; that we must always begin with the simplest and go first to their principle; that it is unnecessary to go to the trouble of discovering whether God formed His works gradually in the simplest ways or produced them all at once, but that in whatever way God had formed them, in order to understand them fully we must first consider them in their principles and take care only in the sequel that what has been thought agrees with what God has done. He knew that the laws of nature, through which God preserves all His works in the order and situation in which they subsist, are the same laws as those through which He was able to form and arrange them; for it is obvious to all those who consider things with care that if God had not arranged His work all at once in the manner in which they would be arranged through time, the entire order of nature would be upset, since the laws of conservation would be contrary to the order of the first creation. If the entire universe remains as we see it, it is because the laws of motion that preserve it in this order were capable of so placing it. And if God had placed them in an order different from the one in which they were placed by the laws of motion, everything would be upset and would be placed, by the force of these laws, in just the order in which we presently perceive them. For example, if He had made the sun in a cubical shape, certainly it would soon have become spherical as a result of the laws of motion.

Suppose a man wants to discover the nature of a chicken. To do this, every day he opens all the eggs it lays. In them he notes a vesicle that contains the embryo of the chicken, and in this vesicle a projecting point that he discovers to be its heart; that from there, blood-carrying conduits that are the arteries go out in all directions, and that this blood returns toward the heart via the veins; that the brain also appears at an early stage, and that the bones are the last parts to be formed. By this means he is delivered from a great many errors, and he even draws many conclusions of considerable use in the understanding of animals from these observations. What can one find to criticize in the conduct of this man? Can we say that he would persuade us that God formed the first chicken by immediate creation of an egg to which He gave a certain degree of heat in order to make it hatch, just because He tries to discover the nature of chickens in their formation?

Then why accuse Descartes of being contrary to Scripture because, wanting to examine the nature of visible things, he studies their formation according to the laws of motion, which are inviolably observed in all cases? He never doubted this:[a] *that the world was created in the beginning with as much perfection as it now has so that (1) the sun, earth, moon, and stars have existed since that time, (2) the earth not only had in itself the seeds of plants but was even partially*

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[a] Article 45 of the third part of his *Principles*.

covered by these plants, and (3) Adam and Eve were created not as infants but at the age of perfect men. The Christian religion, he says, desires that we believe this, and natural reason absolutely persuades us of this truth, because, considering the omnipotent nature of God, we should judge that everything He made has all the perfection it should have. But just as we would have understood the natures of Adam and of the trees of paradise much better if we had studied how infants are gradually formed in the wombs of their mothers, and how plants grow out of their seeds, than if we had only considered what they had been when God created them, so in the same way we would better understand the nature of all things in the world in general if we could imagine certain quite intelligible and very simple principles, by which we could clearly show that the stars, the earth, and in short the entire visible world might have been produced just as if from a few seeds (even though we know that it was not produced in this manner) than if we were merely to describe it as it is or as we believe it was created; and because I think I have found such principles, I shall try to explain them here.

Descartes thought that God had formed the world all at once. But he also believed that God had formed it in the same state, in the same order, and with the same arrangement of parts that it would have had if He had formed it gradually in the simplest ways. And this thought is worthy of the power and wisdom of God: of His power, since in an instant He made all His works in their greatest perfection; of His wisdom, because He thereby made it known that He perfectly foresaw everything that would necessarily happen in matter if it were agitated by the simplest means, and again because the order of nature could not subsist if the world had been produced in a manner contrary to the laws of motion by which it is preserved, as I have just said.

Furthermore, there is a great difference between the formation of living and organized bodies, and that of the vortexes of which the universe is composed. An organized body contains an infinity of parts that mutually depend upon one another in relation to particular ends, all of which must be actually formed in order to work as a whole. For it need not be imagined with Aristotle that the heart is the first part to live and the last to die. The heart cannot beat without the influence of the animal spirits, nor these be spread throughout the heart without the nerves, and the nerves originate in the brain, from which they receive the spirits. Moreover, the heart cannot beat and pump the blood through the arteries unless they as well as the veins that return the blood to it are already complete. In short, it is clear that a machine can only work when it is finished, and that hence the heart cannot live alone. Thus, from the time this projecting point that is the heart of the chicken appears in a setting egg, the chicken is alive; and for the same reason, it is well to note, a woman's child is alive from the moment it is conceived, because life begins when spirits cause the organs to work, which cannot occur unless they are actually formed and connected. It would be wrong then to pretend to explain the formation of animals and plants and their parts, one after the other, on the basis of the simple and general laws governing the communication of motion; for they are differently connected to one another by virtue of different ends and different uses in the different species. But such is not the case with the formation of vortexes; they are naturally born from general laws, as I have just in part explained.

It is ridiculous to say that Descartes believed that the world might have been formed by itself, since he recognized, as do all those who follow the light of reason, that no body can move itself by its own forces, and that all the natural laws of the communication of motion are but the consequences of the immutable volitions of God, who always acts in the same way. Having proved that only God gives motion to matter, and that motion produces in all bodies all the different forms with which they are invested, this was sufficient to deprive the skeptics of all pretext for drawing any advantage from his system. On the contrary, if the atheists reflected a little on the principles of this philosophy, they would soon find themselves constrained to admit their errors; for if they can assert, like pagans, that matter is not created, they cannot at the same time assert that it has never been capable of moving itself by its own powers. Thus, the atheists would at least be obliged to recognize the true mover, if they would not recognize the true Creator. But ordinary philosophy furnishes them with enough to blind themselves and to support their mistakes, for it speaks to them of certain impressed virtues, of certain motor faculties, in short, of a certain nature that is the principle of motion in each thing; and although they have no distinct idea of this thing, they are complacent enough, because of the corruption of their hearts, to substitute it for the true God, imagining that it causes all the wonders we see.

BOOK SIX: PART TWO
Chapter Five

An explication of the principles of Aristotle's philosophy, where it is shown that he never observed the second part of the general rule, and where his four elements, and his elementary qualities, are examined.

In order to compare the philosophies of Descartes and Aristotle, I shall first summarize what the latter thought about the elements and natural bodies in general, which the most learned men think he discussed in his four books *On the Heavens*, for the eight books on physics belong rather to logic or, if you will, to metaphysics than to physics, for they consist of nothing but vague and general words representing no distinct and particular idea to the mind. These four books are entitled *On the Heavens* because the heavens are the most important of the simple bodies with which he deals.

This philosopher begins this work by proving that the world is perfect. Here is his proof. All bodies have three dimensions; they could not have more, since the number three encompasses everything, according to the Pythagoreans. Now, the world is the assemblage of all bodies: therefore, the world is perfect. One could, by this amusing proof, also demonstrate that the world could not be more imperfect than it is, since it cannot be composed of parts that have fewer than three dimensions.

In the second chapter, he begins by assuming certain Peripatetic truths. First, that all natural bodies have the power to move themselves, which he proves neither here nor elsewhere. He affirms on the contrary, in the first chapter of the second book of physics, that it is ridiculous to endeavor to prove it because, he says, it is self-evident, and because only those who cannot discern what is self-evident from what is not stop to prove the evident by the obscure. But it has been shown elsewhere that it is absolutely false that natural bodies have the power to move themselves, and that this seems evident only to those who, like Aristotle, follow the impressions of their senses and make no use of their reason.

In the second place, he says that all local movement is either in a straight or circular line, or a line composed of these. But if he did not want to give serious consideration to what he so rashly proposes, he should at least have opened his eyes, and he would have seen that there are infinitely many kinds of movements that are not composed of the straight and the circular. Or rather, he should have considered that even movements composed of movements in a straight line can be circular in an infinity of ways, if we assume that the component movements increase or diminish their speed in an infinity of different ways, as can be seen from what we said previously.[a] There are, he says, only these two simple motions, the straight and the circular; therefore, all motions are composed of these. But he is mistaken: circular motion is not simple; we cannot conceive of it without thinking of a point to which the body moved, rather than the motion, is related, and everything that contains a relation is relative and not simple. But if we define simple motion, as we should, as that which always tends toward the same place, circular motion would be infinitely complex, since all the tangents of the circular line lead in different directions. We may define the circle in relation to its center; but to judge the simplicity of circular motion by reference to a point with regard to which there is no motion would be ill-advised. It is obvious that a body which moves through the circumference of a circle does not move in relation to the mathematical point that is the center of the circle.

Third, he says that all simple motion is of three sorts: from the center, toward the center, and the third around the center. But it is false that the last is simple, as we have already said. It is also false that there are no simple motions except those that go up or down, because all motions in a straight line are simple, whether they approach or recede from the center, approach or recede from the poles, or some other point. Every body, he says, is composed of three dimensions. Therefore, the motion of all bodies must have three simple motions. What relation do simple motions and dimensions have to one another? Moreover, every body has three dimensions, and no body has motion composed of these three simple motions.

In the fourth place, he assumes that bodies are either simple or compound, and he says that simple bodies are those such as fire, earth, and so on, which have in themselves some force that moves them, and that compound bodies receive their motion from the bodies composing them. But, in this sense, there are no simple bodies at all, as there are none at all that have in themselves some principle of their motion. Neither are there any compound bodies, since compound bodies presuppose simple ones, which do not exist. Thus, there would be no bodies at all. What imagination to define the simplicity of bodies by the power of self-movement! What distinct ideas can be attached to these words *simple* and *compound bodies* if the simple bodies are defined only in relation to an imaginary power to move themselves? But let us see what conclusions he draws from these principles. Circular motion is simple motion; the heavens move in a circle; therefore, their motion is simple. Now, simple motion can belong only to a simple body, that is to say, to a body that moves by its own power: therefore, the heavens are a simple body distinct from the four elements, which move rectilinearly. It is obvious enough that all this reasoning contains nothing but false and absurd propositions. Let us examine his other proofs, since he supplies many devices in them for proving what is as useless as it is false.

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[a] Chapter 4.

His second argument for proving that the heavens are a simple body distinct from the four elements assumes that there are two kinds of motion, the one natural and the other against nature, or *violent*. But it is obvious enough to all who judge things by clear ideas that since bodies have in themselves neither a *nature* nor any principle of their motion, as Aristotle means it, no movement is violent or against nature. Bodies are indifferent as to whether they are moved or not, whether in one direction or the other. But Aristotle, who judges things by sense impressions, imagines that bodies constantly placed in a certain situation with regard to others, according to the laws of the communication of motion, put themselves there because they find it better, and because it conforms more to their nature. Here, then, is Aristotle's reasoning.

The circular motion of the heavens is either natural or against nature. If it is natural, as we have just said, the heavens are a simple body distinct from the elements, since the elements do not move circularly by their natural motion. So either circular motion is contrary to the nature of the heavens, or the heavens will be some one of the elements, such as fire, or something else. The heavens could not be any of the elements because, for example, if the heavens were of fire, the natural motion of fire being upward, the heavens would have two contrary motions, circular and upward, which cannot be, since a body cannot have two contrary motions. If the heavens are some other body, whose motion is not naturally circular, it will have some other natural motion, which cannot be. Because if it naturally moved upward, it would be fire or air; if downward, water or earth: therefore, and so on. I shall not pause to comment on the absurdities of these arguments in detail. I say only that in general what Aristotle says here signifies nothing distinct, and there is nothing true or even persuasive in it. The following is his third argument.

The first and the most perfect of all simple motions must be that of a simple body, and even of the first and most perfect of simple bodies. But circular motion is the first and most perfect of the simple motions, because every circular line is perfect whereas no straight line is perfect. For if it is finite, something can be added to it; if infinite, it is not yet perfect, since it has no *end*,[a] and things are perfect only when they are *complete*. Therefore, circular motion is the first and most perfect of motions. Therefore, the heavens (which move circularly) are simple, and the first and most divine of the simple bodies. Here is his fourth argument.

All motion either is natural or it is not, and all motion that is not natural to some bodies is natural to some others. We see that upward and downward motions, which are not natural to some bodies, are natural to others, since fire does not descend naturally, but earth does. Now, circular motion is not natural to the four elements; there must be, then, a simple body to which this motion is natural. Thus, the heavens, which move circularly, are a simple body distinct from the four elements.

Finally, circular motion is natural or *violent* for some bodies. If it is natural, the body clearly must be simple and most perfect. If it is not natural, it is very strange that this motion is perpetual, since we see that all motions that are not natural last only a very short time. Therefore, we must believe according to all these reasons that there is some other body separated from all those around us whose nature is the more perfect as it is farther removed from us. That is how Aristotle reasons. But I defy the most intelligent of his interpreters to attach any distinct ideas to the terms he employs, and to show that this philosopher begins with the simplest things before talking of the most complex, which is absolutely necessary for correct reasoning, as I have just proved.

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[a] Τϵλοσ and Τελειοσ are equivocal here as *complete* [*fini*] and *end* [*fin*]. This philosopher thus proves that an infinite [*infinie*] line is not perfect because it is not complete [*finie*].

Were I not afraid of boring the reader, I would translate a few chapters of Aristotle. But besides the fact that one takes little pleasure in reading it in French (i.e., when one understands it), I have made it clear enough, by the little of it I have exposed, that his manner of philosophizing is completely useless for discovering truth. For since he himself says in the fifth chapter of this book that those who are mistaken in something from the outset are mistaken ten thousand times more if they progress very far, and since he clearly does not know what he is saying in the first two chapters of his book, we must believe that it is not safe to rely on his authority without examining his reasoning. But to convince you even more, I shall show that no chapter of this first book is without some absurdity.

In the third chapter, he says that the heavens are incorruptible and unalterable; he supplies several rather trifling proofs for this, such as that they are the dwelling place of the immortal gods, and that no change has ever been noted in them. The last of these proofs would be good enough, if he said that someone had returned from the heavens, or that he had been close enough to the heavenly bodies to note changes in them. But I do not know if even now we would rely on his authority, because telescopes teach us the opposite.

He claims to prove, in the fourth chapter, that circular motion has no contrary. Nevertheless, it is manifest that motion from east to west is contrary to that from west to east.

In the fifth chapter, he proves badly that bodies are not infinite, because he draws his proof from the motions of simple bodies. For what prevents there being some extension without motion above his first moved?

In the sixth chapter, he wastes his time proving that the elements are not infinite. For who can doubt it, when one supposes as he does that they are enclosed by the heavens that surround them? But he makes himself ridiculous when he recommends proving this by means of their heaviness and lightness. If the elements were infinite, he says, there would be an infinite heaviness and lightness: that cannot be. Therefore, and so on. Those who want more extensive knowledge of this proof can read it in his books. I believe I would be wasting time to recount it.

He continues, in the seventh chapter, to prove that bodies are not infinite, and his first proof assumes that all bodies must be in motion, which he does not prove and which cannot be proven.

He maintains, in the eighth, that there are not several worlds of the same kind, for this amusing reason: that if there were an earth other than the one we inhabit, since earth is heavy by its nature, this earth would have fallen on ours because ours is the center toward which all heavy bodies must fall. Where did he learn that but from his senses?

In the ninth chapter, he proves that it is not even possible that there be several worlds, because if there were a body above the heavens, it would be simple or compound, in a natural or violent state, which cannot be for reasons he draws from the three types of motion of which he has already spoken.

He affirms, in the tenth, that the world is eternal because it cannot have begun to be and at the same time last forever, since we see that everything that is made is corrupted with time. He learned this from his senses. But who taught him that the world will last forever?

He uses the eleventh chapter to explain what we mean by incorruptible, as if equivocation were really a problem, or as if he had to make significant use of his explanation. But this term *incorruptible* is so clear by itself that Aristotle does not trouble to explain either in what sense it must be taken or in what sense he takes it. It would have been more to the point had he defined an infinity of terms he uses that arouse only sensible ideas, for then we might have learned something by reading his works.

Finally, in the last chapter of this first book *On the Heavens*, he tries to show that the world is incorruptible because it cannot have begun to be and at the same time last forever. All things, he says, subsist for a finite or an infinite time. But what is infinite in only one sense is neither finite nor infinite. Therefore, nothing can subsist in this way.

Behold the reasoning of the *prince* of philosophers and the *genius* of nature, who, instead of making the true cause of natural effects known by clear and distinct ideas, establishes a pagan philosophy on the false and confused ideas of the senses, or on ideas too general to be useful in the search for truth.

I do not reprove Aristotle here for what he did not know, namely, that God created the world in time to make known His power and the dependence of creatures upon Him; and to show He is immutable and never regrets His plans, He will never annihilate it. But I believe I can find fault with what he proves on grounds that have no strength, namely, that the world has existed from all eternity. If he is sometimes excusable in the opinions he supports, he is almost never excusable in the arguments he adduces when he deals with subjects involving some difficulty. You may already be persuaded by the things I have just said, although I have not outlined all the errors I encountered in the book from which I extracted them, and of which I have tried to speak more clearly than is customary.

But, in order that you may be fully convinced that the *genius of nature* will never reveal either the secrets or powers of nature to men, it is relevant that I show that the principles on which this philosopher reasons to explain natural effects have no solidity.

It is clear that one can discover nothing in physics[a] unless one begins with the simplest bodies, the elements; for the elements are the bodies into which all others are resolved, because they are contained in them either actually or potentially. This is how Aristotle defined them. But you will not find in his works that Artistotle used a clear and distinct idea to explain these simple bodies into which he claims the others are resolved. Therefore, since his elements are not clearly known, it is impossible to discover the nature of the bodies composed of them.

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[a] I speak according to the opinion of the Peripatetics, C. 3. 1. 3 *De caelo*

This philosopher accurately states that there are four elements, fire, air, water, and earth, but he does not make their nature clearly known; he gives no distinct idea of them; he does not even want these elements to be the fire, the air, the water, and the earth we see; for indeed if they were, we would at least have some knowledge of them through our senses. It is true that in several places in his works he tries to explain them by the qualities of heat and cold, moisture and dryness, heaviness and lightness. But this way of explaining them is so absurd and ridiculous that it is inconceivable how so many of the learned are content with it. This is what I shall show.

In his book *On the Heavens*, Aristotle claims that the earth is at the center of the world, and that all the bodies he is pleased to call *simple*, because he assumes they move by their nature, must move by simple motion. He affirms that besides circular motion, which he holds to be simple and by which he proves that the heavens, which he assumes to move circularly, are a simple body, there are only two other simple motions, one downward, or from the circumference toward the center, the other upward, or from the center toward the circumference; that simple motion suits the simple bodies, and consequently that earth and fire are simple bodies, of which one is absolutely heavy and the other absolutely light. But because heaviness and lightness can belong to a body either wholly or in part, he concludes that there are still two other elements or simple bodies, of which one is partly light and the other partly heavy, namely, water and air. That is how he proves that there are four and only four elements.

It is clear to those who use their own reason to examine the opinions of men that all these propositions are false, or at least that they cannot pass for clear and incontestable principles, of which one has the clearest and most distinct ideas and which can serve as a foundation for physics. It is certain that there is nothing more absurd than to want to establish the number of elements by the imaginary qualities of heaviness and lightness, saying without a single proof that there are bodies that are heavy and others that are light by their nature. For, if one need speak only without proof, one could say that all bodies are naturally heavy, and that they make every effort to draw near to the center of the world as their place of rest; and one can maintain to the contrary that bodies are naturally light, that they all tend to rise toward the heavens, as toward the place of their greatest perfection. For if you object to someone who says all bodies are heavy, that air and fire are light, that person need only respond that fire and air are not light but less heavy than water and earth, and this is why they seem light. He may also say that these elements are like a piece of wood, which seems light in water not because it is light of itself, since it falls downward in air, but because the water, which is heavier, takes the underside and raises it.

If, on the contrary, you object to someone who maintains that all bodies are light by their nature, that earth and water are heavy, that person will similarly respond that these bodies seem heavy because they are not as light as those around them; that some wood, for example, seems heavy in air not because it is heavy, since it rises in water, but because it is not as light as air.

It is therefore ridiculous to assume as incontestible principles that bodies are light or heavy by their nature. On the contrary, it is obvious that no body has in itself the power of self-movement, and that all bodies are indifferent whether they are moved downward or upward, from east to west, or west to east, from the south pole to the north, or in any other conceivable way.

But let us grant to Aristotle that there are four elements as he desires, namely: fire, air, water, and earth, of which two are heavy and two others light by their nature. What conclusion shall we be able to draw from this for our knowledge of the universe? These four elements are not the fire, air, water, and earth that we see; according to him, they are something else. We do not know them through the senses, and even less by reason, as we have absolutely no distinct idea of them. I wish we knew that all natural bodies are compounds of them, since Aristotle said it; but the nature of these compound bodies is unknown to us, and we can know them only by knowing the four elements or the simple bodies that compose them, for one knows the compound only through the simple.

Fire, says Aristotle, is light by its nature; upward motion is simple; fire is therefore a simple body, since the motion must be proportioned to the movable. Natural bodies are composed of simple bodies; therefore, there is fire in all natural bodies, but a fire unlike that which we see, for fire is often only a *power* in the bodies composed of it. What do these Peripatetic discourses teach us? That there is fire in all bodies, be it *actual* or *potential*; i.e., that all bodies are composed of something we do not see and whose nature we do not know. Behold, therefore, how vigorously we advance.

But if Aristotle does not show us the nature of fire and the other elements of which all bodies are composed, it might be imagined that he at least uncovers for us their qualities and principal properties. It is again necessary to examine what he says about it.

He declares[a] to us that there are four principal qualities belonging to the sense of touch—heat, cold, moistness, and dryness—of which all others are composed; and he distributes their primary qualities to the four elements: he gives heat and dryness to fire; to air, heat and moistness; to water, cold and moistness, and to earth, cold and dryness.[b] He assures us that heat and cold are active qualities and that dryness and moistness are passive qualities. He defines heat as *that which unites things of the same type*, cold as *that which unites all things of whatever kind*, the moist, *that which is not easily contained within its own boundaries but is within external boundaries*, and the dry, *that which is easily contained within its own boundaries and is not easily adapted to the boundaries of bodies around it.*

Thus, according to Aristotle, fire is a hot and dry element; it is therefore an

[a] *De generatione et corruptione*. bk. 2. chs. 2-3.

[b] Chapter 2.

element that unites things of the same nature and is easily contained within its own boundaries and, with difficulty, within external boundaries. Air is a warm, moist element; it is therefore an element that unites things of the same kind and is not easily contained within its own boundaries but is within external boundaries. Water is a cold and moist element, it is therefore an element that unites things of both the same and of different natures and is not easily contained within its own boundaries, but is within external ones. And finally, earth is cold and dry; it is therefore an element that unites things of the same and of different natures, is easily contained within its own boundaries, and is not easily adapted to external boundaries.

There you have the elements explained according to the view of Aristotle, or according to the definitions he has given of their principal qualities; and because, if we believe him in this, the elements are the simple bodies of which all other bodies are composed, and their qualities the simple qualities of which all other qualities are composed, the knowledge of these elements and qualities must be most clear and distinct, since all of physics, i.e., knowledge of sensible bodies composed of them, must be deduced from it.

Let us see then what these principles may lack. First, Aristotle does not attach any distinct idea to the word *quality*; one does not know whether by *quality* he means a real being distinct from matter, or only the modification of matter; it sometimes appears that he means it in one sense, and sometimes in another. It is true that in the eighth chapter of Categories, he defines *quality* as *that in virtue of which things are called such and such*, but this is not all of what we are asking. Second, the definitions he gives of the four first qualities, heat, cold, moistness, and dryness, are all false or useless.

Here is his definition of heat: *heat is that which unites things of the same nature*.

First, I fail to see how this definition explains the nature of heat perfectly, even if it were true that heat always united things of the same nature.

Second, it is false that heat unites things of the same nature. Heat does not unite particles of water; rather, it dissipates them into vapor. It does not unite particles of wine, nor those of any other liquid or fluid body you might choose, not even those of quicksilver. On the contrary, it dissolves and separates all solid and fluid bodies of the same and of different natures; and, if there are some bodies whose parts fire cannot dissipate, it is not because they are of the same nature but because they are too coarse and too solid to be lifted by the motion of the particles of fire.

In the third place, heat in truth can neither unite nor dissipate the parts of a body of the same or of a different nature; for to unite, to separate, to dissipate the parts of some body, it is necessary to move them. Now, heat can move nothing, or at least it is not evident that heat can move bodies; for even though we study heat with all possible attention, we cannot discover that it can communicate to bodies a motion it does not have. We readily see that fire moves and separates the parts of bodies exposed to it; this is true, but perhaps it is not because of its heat, since it is not even clear that it has any. It is rather through the action of its particles, which are visibly in continuous motion. It is clear that particles of fire must communicate part of their motion to a body they have just struck, whether there is heat in fire or not. If the particles of these bodies are not very solid, fire is bound to dissipate them; if they are very solid and coarse, fire can only agitate them and make them slide over each other; finally, if they are a mixture of subtle and coarse, fire is bound to dissipate only those it can push strongly enough to separate them completely from the others. Thus, fire can only separate; and if it unites, it is only by accident. But Aristotle claims the complete opposite. Separating, he says, [a]which some people attribute to fire, is only to reunite things of the same kind, for it is only by accident that fire raises things of different kinds.

If Aristotle had first distinguished the sensation of heat from the particles composing the bodies we call hot, and if he had then defined heat as the motion of particles, saying that heat is what agitates and separates the invisible particles of which visible bodies are composed, he would have given a tolerable enough definition of heat. Nevertheless, we would still not be completely content because it would not precisely reveal the nature of the motion in hot bodies.

Aristotle defined cold as *that which unites bodies of the same or of different natures*. This definition also is worthless, for it is false that cold unites bodies. To unite them, it is necessary to move them; but if we examine his argument, it is obvious that cold can move nothing. Indeed, by *cold* we understand either what we feel when we are cold or what causes the sensation of cold. But it is clear that the sensation of cold can move nothing, since it can impel nothing. When we examine things with reason, we cannot doubt that what causes the sensation is only rest or the cessation of motion. Thus, the coldness in bodies being only the cessation of the sort of motion that accompanies heat, it is obvious that heat separates but cold does not. Hence, cold does not unite either things of the same or of different natures, since what can impel nothing can unite nothing; in a word, as it does nothing, it unites nothing.

Aristotle, judging things by the senses, imagines that cold is as positive as heat, because the sensations of heat and cold are both real and positive; and he also thinks that these two qualities are active. Indeed, if we follow the impressions of the senses, we are correct in believing that cold is a very active quality, since cold water instantly congeals, unites, and hardens molten gold and lead when they are poured from a crucible on a little water, although the heat of these metals might be still great enough to separate the particles of the bodies they touch.

It is obvious from what we have said about the errors of the senses in the first book that if we rely only on the senses to judge the qualities of sensible bodies, it is impossible to discover any certain and incontestable truth that can serve as a principle for advancement in the knowledge of nature. For we cannot even discover by this means which things are hot and which are cold.[b] Of several people who touch tepid water, some find it hot and some find it cold. Those who are hot find it cold, and those who are cold find it hot. And if one assumes that fish are capable of sensation, to all appearances they will still find it hot when all men find it cold. The same is true of air; it seems hot or cold according to the different dispositions of the bodies of those exposed to it. Aristotle claims it is hot, but I do not think that those who live toward the north share his opinion, since even several healthy people whose weather is no less hot than Greece's have held that it is cold. But this question, which has always been important in school, will never be resolved, as long as no distinct idea is attached to the word *heat*.

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[a] *Degeneratione and corruptione,* bk. 2. ch. 2.

[b] See Bk. 1, ch. 11 to ch. 15.

Aristotle's definitions of heat and cold do not give a precise idea of them. Air, for example, and even water, no matter how hot and burning it may be, unites particles of melted lead with those of any other metal. Air unites all fats joined to resins and to any other solid bodies one may wish. And it would take a good Peripatetic to think of exposing putty to the air to separate the cinder from the pitch in it, or other compound bodies, to decompose them. Air is therefore not hot according to the definition Aristotle gives of heat. Air separates liquids from bodies that have absorbed them; it hardens mud and dries hung linens, though Aristotle makes it moist. Air is therefore hot according to this definition. Thus, we cannot determine from this definition whether air is hot. We can be sure that air is hot with regard to mud, since it separates the water from the earth that is mixed with it, but will it be necessary to experience the diverse effects of air on all bodies to know if there is heat in the air we breathe? If so, we shall never know anything about it. Accordingly, the shortest method is to philosophize not about the air we actually breathe but about a certain pure and elemental air not found here below, and to affirm positively, as Aristotle does, that it is hot without giving any proof, and without even distinctly understanding what we mean either by this air or its heat. For in this way we shall provide principles that will not be easy to overthrow—not because of their clarity and solidity but because they are obscure, like phantoms we cannot hurt because they have no bodies.

I shall not pause over the definitions Aristotle gives of moistness and dryness, because it is clear enough that they do not explain their nature. For according to these definitions, fire is not dry, since it is not easily contained within its own boundaries; and ice is not moist, since it is easily contained within its own boundaries and since it is not easily adapted to external boundaries. It is true that ice is not moist, if by *moist* we mean *fluid*. But if we mean this, it must be said that flame is very moist, as well as melted gold and lead. It is also true that ice is not moist if by *moist* we mean what adheres easily to things it touches; but in this sense, pitch, grease, and oil are much more moist than water, since they are more adherent than water. In this sense quicksilver is moist, since it adheres to metals; and water itself is not completely moist, since it does not easily adhere to metals. Therefore, we must not resort to the testimony of the senses to defend the views of Aristotle.

But let us not further examine the marvelous definitions this philosopher has given us of the four elementary qualities, and let us also assume that everything the senses teach us about these qualities is incontestable. Let us rouse our faith once more, and believe that all these definitions are quite correct. Then merely let us see whether it is true that all qualities of sensible bodies are composed of these elementary qualities. Aristotle claims it is, and he must claim this, since he regards these four primary qualities as the principles of the things he wants to explain in his *Physics*.

Thus, he teaches us that colors result from mixing the four elementary qualities: that white is produced when moistness surpasses heat, as in old people who turn grey; black, when moistness becomes dry, as in the walls of cisterns; and all the other colors from similar mixtures. He teaches that odors and flavors are also made by different mixtures of the *dry* and the *moist* caused by heat and cold, and that even heaviness and lightness depend on it. In a word, it is necessary according to Aristotle, in order that there be some plausible connection between his principles and the conclusions he draws from them, for all sensible qualities to be produced by the two *active* qualities heat and cold, and be composed of the two *passive* ones, moistness and dryness.

However, it is even more difficult to be convinced of all these things than of all those we have just recounted from Aristotle. It is difficult to believe that earth and the other elements would not be colored or visible if they were in their natural purity, without any admixture of the elementary qualities, even though learned commentators on this philosopher assure us that this is so. One does not understand what Aristotle means when he affirms that whiteness of hair is produced by moistness, because the moistness of old people is stronger than their heat, even if, to try to clear up his thought, one puts the definition in the place of the defined. For it appears to be incomprehensible gibberish to say that old people's hair turns white because *what is not easily contained within its own boundaries, but within external foreign boundaries*, overcomes *what unites things of the same nature*. One has no less trouble believing he has given a good explanation of flavor by saying it consists in the mixture of dryness, moistness, and heat, especially when one substitutes for these words the definitions this philosopher gives of them, which would be useful if they were good definitions. And one might not even be able to keep from laughing if, in place of the definitions of hunger and thirst[a] that Aristotle gives, saying that hunger is the desire for *hot* and *dry*, and thirst is the desire for *cold* and *moist*, one were to substitute the definitions of these words, calling hunger *the desire of that which unites things of the same nature and is easily contained within its own boundaries, and with difficulty within external boundaries*, and defining thirst as *the desire for that which unites things of the same and of different nature, and for that which, not easily contained within its own boundaries, is easily contained within external boundaries*.

Certainly it is a very useful rule for determining whether one has defined one's terms accurately, and for avoiding mistakes in one's inferences, to frequently replace the defined with the definition; for in this way one knows whether the terms are equivocal and whether the reasoning is valid, or if one is reasoning correctly. That being the case, what can we say about Aristotle's inferences, which become an absurd and ridiculous jumble when we use this rule? And what should we say of those who reason only upon the basis of the confused and false ideas of the senses, since this rule, which preserves light and evidence in all correct and solid inferences, brings nothing but confusion to their discourse?

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[a] *De anima*. bk. 2. ch. 3.

It is not possible to expose the oddity and extravagance of the explanations Aristotle gives of all kinds of matters. When the subjects he treats are simple and easy, his errors are simple, and it is easy enough to discover them. But when he claims to explain complex things depending on several causes, his errors are at least as complex as the subjects he treats, and it is impossible to develop them all in order to expose them to others.

This great genius, who is said to have succeeded so well in the rules he has given for good definition, does not even know which things can be defined, because, not distinguishing between clear and distinct knowledge and knowledge that is sensible, he imagines he can understand and explain to others things of which he has no distinct idea. Definitions should explain the nature of things, and the terms that compose them should awaken distinct and particular ideas in the mind. But it is impossible to define the sensible qualities of heat, cold, color, flavor, and so on, in this way, when the cause is confused with the effect, and the motion of bodies with the sensation that accompanies it. The reason for this is that since sensations are modifications of the soul, we do not know them by clear ideas but only by inner sensation; and as I have explained in Book[a] Three, it is impossible to attach words to ideas we do not have.

As we have distinct ideas of a circle, a square, a triangle, and hence know their natures distinctly, so we can give them good definitions and can even deduce all the properties of these figures from our ideas of them, and explain them to others by terms to which we attach these ideas. But we cannot define either heat or cold insofar as they are sensible qualities, because we do not know them distinctly and by idea, but only by consciousness or inner sensation.

Nor should we define the heat outside us by its effects, for if we substitute the definition of these effects for the definition of the heat, we shall readily see that this definition will serve only to throw us into error. If, for example, one defined heat as *that which unites things of the same kind*, then without saying more, we shall be able, in following this definition, to confuse heat with things that have no relation to it. We shall be able to say that the magnet unites iron filings and separates them from those of silver because it is hot, that a pigeon eats hemp seed and leaves other grain because a pigeon is hot, that a miser separates his gold louis from his silver because he is hot. In short, there is no extravagance in which this definition would not involve us if we were stupid enough to follow it. This definition then does not explain the nature of heat, and we cannot deduce all the properties of heat from it; because if one takes its terms literally, one infers irrelevancies, and if one substitutes it for what is defined, then one falls into absurdities.

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[a] Pt. 2, ch. 7, n. 4.

However, if we are careful to distinguish heat from its cause, then even though it is indefinable, since it is a modification of the soul of which we have no clear idea, we can define its cause, since we have a distinct idea of motion. But we must be careful that the heat taken for such a motion does not always cause in us the sensation of heat. Water, for example, is hot, since its parts are fluid and in motion; and apparently fish find it hot, since at least it is warmer than ice, whose parts are more at rest. But it is cold relative to us because it has less motion than the parts of our bodies, whatever has less motion than another being in a certain sense at rest relative to it. Thus, it is not in relation to the motion of the fibers of our bodies that we must define the cause of heat or the motion that stimulates it. We must, if we can, define this motion absolutely and in itself, for then the definitions we give of it will enable us to understand the nature and properties of heat.

I do not believe I am obliged to examine the philosophy of Aristotle further, or to unravel the extremely confused and perplexing errors of this author. It seems to me I have shown that (1) he does not prove that his four elements exist, and he defines them badly; (2) his elementary qualities are not as he claims, he does not know their nature, and the secondary qualities are not all composed of the elementary ones; finally, (3) even if one grants him that all bodies are composed of the four elements, as the secondary qualities are from the primary, his whole system would be useless in the search for truth, since his ideas are not sufficiently clear to preserve the evidence in our reasoning.

If you do not believe I have set forth the genuine opinions of Aristotle, you can see for yourself in the books he wrote, *On The Heavens* and *On Generation and Corruption*; for it is from these that I took almost everything I said about them. I did not wish to relate anything from his eight books on physics, because this is properly speaking only a kind of logic; and one only finds vague and indeterminate words there, by which he teaches how one can talk about physics without understanding a thing about it.

As Aristotle often contradicts himself and as one can support nearly any kind of opinion by passages drawn from him, I have no doubt that one can establish by reference to Aristotle himself opinions contrary to those I have attributed to him. But I do not guarantee it. It suffices that I have the books just cited to prove what I said. And I hardly even put myself to the trouble of arguing whether these books are by Aristotle or whether they are corrupted. I take Aristotle as he is and as he is ordinarily received, since we should not take too much trouble to know the true genealogy of things for which we have little respect; besides, it cannot be satisfactorily clarified, as you can see from Patricius' *Discussionum Peripateticorum*.

BOOK SIX: PART TWO
Chapter Six

General directions necessary for conducting an orderly search for truth and in the choice of sciences.

Lest it be said that I only destroy without establishing anything certain and incontestable in this work, it is appropriate that I here set forth in a few words the order we must follow in our studies in order to avoid error, and even that I point out some very necessary truths and sciences whose evidence is such that we cannot withhold our assent from it without suffering the secret reproaches of our reason. I shall not explain these truths and sciences at great length, for that has already been done; I do not propose to reprint the works of others; I shall content myself with reviewing them. I shall merely demonstrate the order we must follow in any study we would wish to make of them, in order always to preserve the evidence in our perceptions.

Of all our knowledge, the first is of the existence of our soul; all our thoughts are incontestible demonstrations of this, since there is nothing more obvious than that what actually thinks, is actually something. But if it is easy to know the existence of our soul, it is not so easy to know its essence and nature. If one wants to know what it is, it is above all necessary to be careful not to confuse it with the things to which it is united. If one doubts, if one wills, if one reasons, it is necessary only to believe that the soul is a thing that doubts, wills, and reasons, and nothing more, provided one has not experienced other qualities in it; for one knows the soul only by the inner sensation one has of it. One must not confuse one's soul with one's body, nor with blood, animal spirits, fire, nor with an infinity of other things for which philosophers have taken it. One must only believe of the soul what one would not know how to avoid believing of it, and what one is fully convinced of by the inner sensation one has of oneself, for otherwise one would be mistaken. Thus, one will know by simple perception or inner sensation all one can know of the soul, without having to construct arguments in which error might be found. For when we reason, the memory acts; and where there is memory, there can be error, should there be some evil genius on whom we depend in our knowledge and who amuses himself by deceiving us.

If I assumed, for example, that there was a God who delighted in beguiling me, I am quite persuaded that he could not deceive me in my knowledge through simple perception, such as that by which I know that I am, what I am thinking of, or that twice two equals four. For even if I should really suppose such a God, a God as powerful as I can imagine, I feel that in this extravagant supposition I could not doubt that I am, or that twice two equals four, because I perceive these things through simple perception without the use of memory.

But if I reasoned without perceiving the principles of my reasoning clearly, merely recalling that I have so perceived them in the past, then if this deceiving God were to join this recollection to false principles, as He could do if He willed to, I would make only false inferences. The same thing happens to those who perform long calculations, when they imagine that they clearly remember that they knew that nine times nine makes seventy-two, or that twenty-one is a prime number, or some similar error, on the basis of which they draw false conclusions.

Thus, it is necessary to know God, and to know that He is not a deceiver, if we want to be fully convinced that the most certain sciences, (like arithmetic and geometry), are true sciences; for without that, the evidence is not complete and we can withhold our assent. It is also necessary to know by simple perception and not by inference that God is not a deceiver, because reasoning can always be mistaken if we assume God to be a deceiver.

All ordinary proofs of the existence and the perfections of God drawn from the existence and the perfections of His creatures have, it appears to me, this defect: they do not convince the mind through simple perception. All these proofs are inferences that are intrinsically convincing; but being inferences, they are not convincing on the supposition that there is an evil genius who deceives us. They are sufficiently convincing that there is a power superior to us, as even this extravagant supposition establishes; but they do not fully convince us that there is a God or an infinitely perfect being. Thus, in these inferences the conclusion is more obvious than the premise.

It is more obvious that there is a power superior to us than that there is a world, since there is no supposition that can preclude the demonstration of this superior power, whereas given the supposition of an evil genius who delights in deceiving us, it is impossible to prove that there is a world. For we could always conceive that this evil genius would give us sensations of things that would not exist (as sleep and certain illnesses make us see things that never were), and even make us actually feel pain in imaginary members we no longer have or that we never had.

But the proofs of the existence and the perfections of God drawn from our idea of the infinite are proofs by simple perception. We see that there is a God as soon as we see the infinite, because necessary existence is included in the idea of the infinite, or to speak more clearly, because we can only apprehend the infinite in the infinite itself. For the first principle of our knowledge is that nothingness is not perceptible, whence[a] it follows that, if we think of the infinite, it must exist. We also see that God is not a deceiver, because, knowing that He is infinitely perfect and that the infinite cannot lack any perfection, we clearly see that He does not want to beguile us, and even that He cannot, since He can only do what He wills or what He is capable of willing. Thus, there is a God and a true God who never deceives us, although He does not always enlighten us; and we are often mistaken when we do not have His enlightenment. All these truths are known through simple perception by attentive minds, though it might appear that I am constructing arguments in order to expose them to others. We can assume them as incontestable principles on which we can reason; for having recognized that God does not delight in deceiving us, it is then permissible for us to reason.

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[a] See the first two *Dialogues on Metaphysics,* and all of Chapter 2, Book 4, of this work.

It is obvious that the certitude of faith also depends on this premise: that there is a God who is not capable of deceiving us. For the existence of a God and the infallibility of divine authority are items of natural knowledge, and common notions to minds capable of serious attention rather than articles of faith, although it is a special gift of God to have a mind capable of concentration sufficient to understand these truths as it should, and to want to apply oneself diligently to understanding them.

From this principle, that *God is not a deceiver*, we might also conclude that in actual fact we have a body to which we are united in a particular manner, and that we are surrounded by many others. For we are inwardly convinced of their existence by continuous sensations God produces in us, which we cannot correct by reason without harming faith—although through reason we can correct the sensations that represent them to us as having certain qualities and certain perfections they do not in fact have. Thus, we should not believe that these bodies are as we see them, or as we imagine them, but only that they exist and that they are as we conceive them by reason.

But to preserve the order in our reasoning, we need not reexamine whether we have a body and whether there are others around us, or whether we only have the sensations of them even though these bodies do not exist. This question contains too many great difficulties, and it is perhaps not as necessary as might be imagined to resolve it in order to perfect our knowledge, nor even to have an exact knowledge of physics, morality, and some other sciences.

We have in us the ideas of numbers and extension, whose existence is incontestable and whose nature is immutable, that will eternally furnish us with matter for thought, if we want to know all their relations. And it is necessary that we begin to use our minds about these ideas, for reasons that it will not be useless to set forth. There are three principal ones.

The first is that these ideas are the clearest and most evident of all. For if, to avoid error, we should always preserve evidence in our reasonings, it is clear that we should reason on the basis of ideas of numbers and extension rather than on the confused or complex ideas of physics, morals, mechanics, chemistry, and all the other sciences.

The second is that these ideas are the most distinct and most exact of all, especially ideas of numbers. As a result, the habit we develop in arithmetic and geometry of not being content until we know the relations of things precisely gives to the mind a certain precision not possessed by those who content themselves with probabilities, with which the other sciences are filled.

The third and most important reason is that these ideas are the unchanging rules and the common measures of all the other things we know and can know. Those who know the relations of numbers and figures perfectly, or rather the art of making the necessary comparisions to know their relations, have a kind of universal science, and a very well founded way of discovering everything not beyond the ordinary limits of the mind with evidence and certitude. But those without this art cannot discover slightly complex truths with certainty, even though they have very clear ideas of things whose complex relations they try to know.

It is these or similar reasons that led some ancients to make young people study arithmetic, algebra, and geometry. Apparently they knew that arithmetic and algebra extend the scope of the mind and give it a certain acuteness we cannot acquire from other studies, and that geometry rules the imagination so well that it does not easily grow confused. For this faculty of the soul, so necessary for the sciences, acquires through the practice of geometry a certain scope of accuracy that impels and preserves the mind's clear perception even in the most perplexing difficulties.

If we want, therefore, always to preserve evidence in our perceptions, together with a complete certainty in our reasonings, we should first study arithmetic, algebra, analysis, and geometry, both simple and compound. Among the books known to me, the best for learning arithmetic, algebra, and analysis (which is properly the art of discovering truth in the exact sciences) are *La Science du calcul des grandeurs en général*, and the first volume of *L'Analyse démontreé* by Father Reyneau, priest of the Oratory. For ordinary geometry, I recommend the book by the duke of Burgundy. We should use analysis to learn compound geometry, and read works where this science is treated by analysis. If you want to learn only the principal properties of conic sections and their uses, you can be satisfied with the first part of the second volume of *L'Analyse démontrée*. But if you want to learn most of the properties of these sections together with their uses, you will read the posthumous work of the marquis de l'Hôpital, entitled *Traité analytique des sections coniques*. You can add Descartes's *Geométrie* because of the reputation of this learned man, but you will have no need of it after reading the preceding books. Finally you will apply yourself to the new differential and integral calculi, and to the methods drawn from them for the understanding of curved lines, which are of use even in physics. You will also find differential calculus and its uses treated thoroughly and with a great deal of order and clarity in the excellent work of the marquis de l'Hôpital, entitled *Des infiniment petits*. You will also find the differential calculus and its uses in the second part of the second volume of *L'Analyse démontrée*, as well as the integral calculus, together with the method for applying it to curved lines, and to problems of mathematical physics in the third part. By reading these works, you will put yourself in a state which will enable you to make discoveries on your own, and to understand those found in the archives of the Academy of Sciences, and in the works of foreigners.

When you have studied these general sciences with care and application, you will know with evidence a very great number of truths fruitful for all the exact and particular sciences. But I believe I must say that it is dangerous to pause here very long. We should, so to speak, scorn or neglect these general sciences to study physics and morality, because these sciences are much more useful, although not so fit for making the mind precise and penetrating. And if we wish always to preserve the evidence in our perceptions, we must beware not to let some principle that is not evident go to our head; i.e., some principle such that the Chinese, say, might conceivably not agree with it, after having carefully considered it.

Thus, for physics it is necessary to admit only notions common to all men, i.e., the axioms of geometers and the clear ideas of extension, figure, motion, and rest, and others as clear as those, if there are any. It will be said perhaps that the essence of matter is not extension, but of what importance is that? It suffices that the world we shall conceive to be formed from extension appears similar to the one we perceive, even if it is not made of this matter, which is good for nothing, of which we know nothing, and about which they nevertheless make so much fuss.

It is not absolutely necessary to examine whether there are actually beings external to us corresponding to these ideas, as we do not reason on the basis of these beings but on their ideas. We should only be careful that the reasonings we make about the properties of things are in agreement with our sensations of them, i.e., that what we think is in perfect agreement with experience, because in physics we try to discover the order and connection of effects with their causes, either in bodies, if there are any, or in our sensations, if they do not exist.

It is not that we can really doubt that there are actually bodies, when we consider that God does not deceive and <when we consider> the regulated order of our sensations in natural encounters and in those that happen only to make us believe what we cannot naturally understand. The point is that it is not first necessary to examine with great reflections something no one doubts, and that is not of much use to the knowledge of physics considered as a true science.

Neither is it necessary to bother about knowing whether there are some qualities in the bodies around us other than those of which we have clear ideas, for we should only reason according to our ideas; and if there is some other thing of which we have no clear, distinct, and particular idea, we will never know anything about it and we will never reason about it correctly. Perhaps in reasoning according to our ideas, we shall reason according to nature, and shall recognize that nature is perhaps not so obscure as we ordinarily imagine.

Likewise those who have not studied the properties of numbers often imagine that it is impossible to solve certain problems even though they are very simple and easy; thus, those who have not meditated on the properties of extension, figure, and motion are extremely inclined to believe and defend the view that all questions posed in physics are inexplicable. (But) we must not be stopped by the opinions of those who have examined nothing, or who have not examined anything with the necessary application. For although there are few truths concerning natural things that are fully demonstrated, it is certain that there are some indubitable general ones, although it is quite possible not to think about them, to be ignorant of them, and to deny them.

If we wish to meditate in an orderly way, with all the necessary time and application, we shall discover many of these certain truths of which I speak. But, in order to discover them more easily, the principles of Descartes's philosophy must be read carefully, without accepting anything he says unless the force and the certitude of his arguments will not permit us to doubt them.

Since morality is the most necessary of all the sciences, it is also necessary to study it with more care; for it is especially in this science that it is dangerous to follow the opinions of men. But in order to avoid mistakes and to preserve the evidence in our perceptions, it is merely necessary to meditate on incontestable principles, at least for all those whose hearts are not corrupted by debauchery and whose minds are not blinded by arrogance; for there is no incontestable principle of morality to minds of flesh and blood, who have aspirations to be clever wits. These sorts of people do not understand the simplest truths, or, if they understand them, they always contest them from a spirit of contradiction and to preserve their reputation as clever wits.

Some of the most general of these principles of morality are: that God, having made all things for Himself, made our minds to know Him and our hearts to love Him; that being as powerful and as just as He is, we cannot be happy unless we follow His orders, nor unhappy if we follow them; that our nature is corrupt, our minds depend on our bodies, our reason on our senses, our will on our passions; that we are powerless to do what we clearly see to be our duty, and that we need a liberator. There are still many other principles of morals, such as: that retreat and penitence are necessary to diminish our union with sensible objects, and to augment what we have with intelligible goods, true goods, goods of the mind; that we cannot taste violent pleasure without becoming its slave; that we must never undertake anything through passion; that we must not search for security in this life, and so on. But because these last principles depend on the preceding ones and on the knowledge of man, they should not be immediately accepted as incontestable. If we meditate on these principles with order and with as much care and application as the scope of the subject merits, and if we accept as true only conclusions that follow deductively from these principles, we shall have a sure morality that will agree perfectly with that of the Gospel, although it might not be as complete or as extensive. I tried to demonstrate the foundations of morality in a special treatise, but I hope both for myself and others that someone provides a work both more exact and more complete on the subject.

It is true that in moral reasoning it is not so easy to preserve evidence and precision as in some other sciences, that knowledge of man is absolutely necessary to those who want to extend this science a little; and it is because of this that the majority of men do not succeed in it. They do not want to study themselves in order to recognize the weaknesses of their nature. They grow tired of interrogating the Master who teaches us His own desires inwardly, which are immutable and eternal laws and the true principles of morals. They do not listen with pleasure to Him who does not speak to their senses, who does not respond according to their senses, does not respond according to their desires, does not flatter their secret arrogance. They have no respect for words that do not strike the imagination with their brilliance, that are pronounced without noise, and that we never hear clearly except in the silence of creatures. But they consider with pleasure and respect Aristotle, Seneca, or some new philosophers who beguile them, either by the obscurity of their words, the turn of their expressions, or the plausibility of their reasons.

Since the sin of the first man, we esteem only what has relation to the preservation of the body and the convenience of life. And because we discover these sorts of goods by way of the senses, we want to make use of them in all encounters. The Eternal Wisdom that is our true life, and the only light that can illuminate us, often shines only on blind men, and speaks only to the deaf when it speaks only within the hidden depths of reason, for we are nearly always distracted by externals. As we ceaselessly question all creatures to learn some news of the good that we search for, it was necessary, as I have already said elsewhere, that this wisdom be presented before us, without however going outside of us, in order to teach us by sensible words and convincing examples the road leading to true happiness. God unceasingly imprints in us a natural love for Him, in order that we love Him unceasingly; and, by this same impulse of love, we constantly remove ourselves from Him, by fleeing with all the forces He gives us toward the sensible goods that He forbids. Thus, wanting to be loved by us, it was necessary that He make himself sensible and present Himself before us, to stop, through the sweetness of His grace, all our vain agitations, and to begin our healing by sensations or delights similar to the prevenient pleasures that had begun our illness.

Thus, I do not claim that men can easily discover all the rules of morality necessary for salvation by the strength of their minds and still less that they can act according to their light, for their hearts are even more corrupted than their minds. I say only that, if they admit only obvious principles and if they reason deductively on these principles, then will they discover the same truths we learn in the Gospel; because it is the same Wisdom that speaks immediately through itself to those who discover truth in the evidence of arguments that speaks through the Sacred Scriptures to those who interpret them well.

It is necessary, then, to study morality in the Gospel to save oneself the work of meditation and to learn with certitude the laws according to which we should regulate our ways. As for those who are not content with certitude, because it only convinces the mind without enlightening it, they should meditate with care on these laws, and deduce them from their natural principles, in order to know through reason and with evidence what they already know through faith with complete certitude. It is thus that they will convince themselves that the Gospel is the most solid of all books; that Jesus Christ perfectly understood the malady and disorder of nature; that He has cured it in the most useful manner for us, and the most worthy of Him that can be conceived; but that the lights of the philosophers are but obscure shadows; that their most brilliant virtues are but an intolerable arrogance; in a word, that Aristotle, Seneca, and the others, to say nothing more, are but men.

BOOK SIX: PART TWO

Chapter Seven

The use of the first rule, concerning particular questions.

We have paused sufficiently to explain the general rule of method, and to show that Descartes followed it exactly enough in this system of the world, and that Aristotle and his cultists did not observe it at all. It is now appropriate to descend to the particular rules needed to resolve all kinds of questions.

The questions we can form about all kinds of subjects are of several types not easy to enumerate, but here are the main ones: sometimes we search for unknown causes through known effects; sometimes we search for unknown effects through their known causes. Fire burns and dissipates wood; we search for the cause of it. Fire consists of a massive motion of the parts of wood; we want to know what effects this motion is capable of producing, whether it can harden mud, melt iron, and so on.

Sometimes we search for the nature of a thing through its properties; sometimes we search for the properties of a thing whose nature is known. We know or suppose that light is instantly transmitted, and that nevertheless it is reflected and collected by means of a concave mirror in such a manner that it dissipates or melts the most solid bodies; and we want to use these properties to discover its nature. We know on the other hand, or we suppose, that the entire space stretching from the earth to the sky is full of small, extremely agitated spherical vortexes, which tend constantly to move away from the sun: and we want to know if the force of these tiny vortexes can be instantaneously transmitted, and whether, being reflected in a concave mirror, they must be reunited, dissipating or melting the most solid bodies.

Sometimes we search for all the parts of a whole; sometimes we search for a whole through its parts. We search for all the unknown parts of a known whole when we search for all the *aliquot* parts of a number, all the *roots* of an *equation*, all the right angles a figure contains, and so on. And we search for an unknown whole, all of whose parts are known, when we search for the sum of several numbers, the area of many figures, the capacity of several vessels. Or we seek a whole of which one part is known and whose other parts, although unknown, contain some known relation to what is unknown, as when we search for the number whose one known part is fifteen and whose other unknown part is half or a third of the whole unknown number; or when we search for an unknown number equal to fifteen and to twice the root of this unknown number.

Finally, we sometimes seek to discover whether certain things are equal or similar to others, or by how much they are unequal or different. We want to know if Saturn is larger than Jupiter, or by about how much; whether Rome's weather is hotter than Marseilles', and by how much.

What is common to all the questions is that one frames them only to discover some truth; and, because all truths are but relations, we can generally say that in all questions we search only for the knowledge of some relations, be they relations between ideas or between things and their ideas.

There are several types of relations. There are some between the natures of things, between their size, their parts, attributes, qualities, effects, their causes, and so on. But we can reduce them all to two, namely, to relations of magnitude and relations of quality, by calling all those relations between things considered as capable of quantitative variation relations of magnitude, and all the others relations of quality. Thus, we can say that all questions tend to the discovery of some relations, be they of magnitude or of quality.

The first and principal rule is that it is necessary to know very distinctly the state of the question to be resolved, and to have sufficiently distinct ideas of its terms, to be able to compare them, and thus to recognize their unknown relations.

Therefore, it is first necessary to perceive very clearly the unknown relation we are searching for there, since it is obvious that if we had no certain sign by which to recognize this unknown relation once found, the search for it would be vain.

Second, it is necessary, so far as possible, to make the ideas corresponding to the terms of the question distinct by removing ambiguity from the terms, and to clarify them by considering them as attentively as possible. For if these ideas are so confused and obscure that we cannot make the comparisons necessary to discover the relations we seek, then we are not yet in a position to resolve the question.

In the third place, it is necessary to consider as attentively as possible the conditions expressed in a question, if there are any, because without that we understand the state of the question only confusedly, besides which the conditions ordinarily lead the way to resolving it. Hence, as soon as the state of a question and its conditions are well understood, we know what we seek and sometimes even where we must go to discover it.

It is true that conditions are not always completely expressed in the questions, but this is because these questions are indeterminate, and because we can resolve them in several ways, as when we ask for a square number, a right-angled triangle whose base is given, or two numbers whose product is equal to their sum, and so on, without specifying anything more. Or it may be that he who proposes them does not know the ways to resolve them, or that he hides them to confuse; as if one were to ask that two mean proportionals be found between two lines, without adding by the intersection of the circle and the parabola, or of the circle and the ellipse, and so forth.

It is, then, absolutely necessary that the sign by which we conceive what we seek be very distinct, that it not be ambiguous, and that it can designate only what we seek; otherwise we could not be assured of having resolved the proposed question. Likewise, it is necessary to carefully separate all conditions of the question that make it puzzling, and without which it subsists in its entirety; for they fruitlessly divide the capacity of the mind. And besides, when the conditions that accompany it are useless, we do not yet distinctly conceive the state of a question.

For example, if we proposed a question in these terms: make it impossible for a man, being perfumed and covered with a crown of flowers, to remain at rest, although he sees nothing capable of agitating him. We must know whether the word *man* is used metaphorically; whether the word *rest* is equivocal, whether it is not understood in relation to locomotion, or the passions, as these words *although he sees nothing capable of agitating him* seem to indicate. We must know if the conditions *being perfumed and covered with a crown of flowers* are essential. After this, with the state of this ridiculous and indeterminate question clearly known, we will be able to resolve it easily by saying that one has only to put a man in a vessel under the conditions expressed in the question.

The skill of those who propose such questions consists in adding conditions that appear necessary although they are not, in order to turn the minds of their listeners to useless things of no help in resolving the question. As in this question, often posed by maidservants to children: I have seen, they say, hunters, or rather fishermen, who carried with them what they did not catch, and who threw what they did catch into the water. The mind, being preoccupied with the idea of fishermen who catch fish, cannot imagine what is meant; and the whole difficulty in resolving this silly question arises from what is not clearly conceived, because we do not stop to consider that hunters and fishermen, as well as other men, sometimes seek in their clothes certain small animals they toss away if they do catch them, and carry with them if they cannot.

Also, sometimes we do not state all the conditions necessary for resolution in the problems, and that makes them at least as difficult as when we add useless conditions, as in this one: to make a man immobile without tying or hurting him, or rather having placed the little finger of a man in his ear, make him immobile so to speak in that he cannot leave where he was until he removes his little finger from his ear. This appears impossible at first, and it is indeed because we can walk quite well even though we have our little finger in our ear. Thus, there is still one condition missing, which would remove all difficulty if it were expressed. This condition is that we should make the one who puts his little finger in his ear embrace a bedpost or something similar, so that the post is enclosed between his arm and his ear, for he will not be able to leave his place without extricating himself and drawing his finger from his ear. It is not added as a condition of the problem that there is still something to do, so that the mind will not stop searching for it, and hence it cannot be discovered. But those who undertake to resolve these kinds of problems should make all inquiries necessary to enlighten themselves on the point where the difficulty lies.

These arbitrary problems seem to be trifling, and indeed they are in one sense, for we learn nothing when they are resolved. Nevertheless, they are not so different from natural problems as might be imagined. It is necessary to do roughly the same things to solve the one as the other. For if the skill or the malice of men make arbitrary problems puzzling and difficult to resolve, natural effects are by nature surrounded by obscurities and uncertainties. And we must dispel these uncertainties with the mind's attention and by experiments that are the kinds of inquiries we make of the Author of nature, just as we omit ambiguities and useless circumstances from arbitrary problems with the mind's attention and with adept inquiries made of those who propose them to us. Let me explain these things in order, and in a more serious and instructive manner.

There is a large number of questions that seem very difficult because they are not understood, but that should be taken as axioms (which would still need some explanation) rather than for true problems. For it seems to me that we should not put certain incontestable propositions in the class of problems when we distinctly perceive their terms.

For example, the question of the immortality of the soul is posed as a difficult question to resolve, because those who ask this question or who claim to resolve it do not distinctly perceive its terms. Since the words *soul* and *immortal* mean different things, and since they do not know how they understand it, they cannot resolve whether the soul is immortal; for they do not precisely understand either what they ask or what they seek.

By this word *soul* we can understand a substance that thinks, desires, feels, and so on. We can take the soul for the motion or circulation of the blood, and for the configuration of the parts of the body; and finally, we can take it to be the blood itself and animal spirits. Likewise, by this word *immortal* we mean what cannot die through the ordinary forces of nature, or cannot change, or finally that which can be neither corrupted nor dispersed like a vapor or smoke. Thus, assuming that we take the words *soul* and *immortal* in one of these meanings, the slightest attention of the mind will judge whether it is immortal.

For, first, it is clear that *soul* taken in the first sense—that is to say, for a substance that thinks—is immortal, if we also take *immortal* in the first sense, as that which cannot perish by the ordinary forces of nature. For it is not even conceivable that any substance should become nothing. We must resort to a quite extraordinary power of God to conceive of that being possible.

Second, the soul is immortal, if we take *immortal* in the second sense, as that which can be neither corrupted nor dispersed into vapor or smoke; for it is obvious that a thing that cannot be divided into an infinity of parts cannot be corrupted or resolved into vapor.

Third, the soul is not immortal, taking *immortal* in the third sense, as signifying that which cannot change; for we have enough convincing proofs of the changes of our souls: that now it feels pain, and now pleasure; that it sometimes wants certain things and that it stops wanting them; that being united to the body, it can be separated from it, and so on.

If we take the word *soul* in some other way, it will likewise be very easy to see whether it is immortal, by taking the word *immortal* in a fixed and determined sense. Hence what makes these questions difficult is that they are not distinctly conceived, and the terms that explain them are ambiguous; they need explanation rather than proof.

It is true that there are some people stupid enough and others imaginative enough to constantly take the soul for a certain configuration of the parts of the brain, and for the motion of spirits. And it is certainly impossible to prove to these sorts of people that the soul is immortal and cannot die, for on the contrary, it is obvious that the soul, taken in the sense they understand it, is mortal. Thus, it is not that it is a difficult question to resolve; but rather it is a proposition difficult to make understandable to people who do not have the same ideas as we do, and who make every effort not to have them and to blind themselves.

When therefore we ask if the soul is immortal, or some other question, we must first get rid of the ambiguity in the terms and know in what sense they are taken in order to distinctly conceive the state of the question; and if those who propose it do not know how they mean it, we must ask them questions in order to enlighten and determine them. If in questioning them we recognize that their ideas do not agree with ours, it is useless to answer them. For what do we reply to a man who imagines that a desire, for example, is nothing but the movement of spirits; that a thought is but a trace or image of objects where spirits have formed in the brain; and that all reasonings of men consist only in the different placement of certain tiny bodies diversely arranged in the head? To answer him that the soul, taken in the sense he understands, is immortal, is to deceive him, or to make yourself ridiculous in his mind. But to answer him that it is mortal is in a sense to confirm him in an error of very great consequence. We must therefore not answer him, but only try to make him retreat into himself, in order that he may receive the same ideas as we, from Him who alone is capable of enlightening him.

Another question that appears difficult to resolve is to know whether animals have a soul. Yet, when we remove the ambiguities, it no longer seems difficult, and most of those who think animals do have souls are, without knowing it, of the same opinion as those who think they do not.

We can take the soul for a spiritual thing or else for a corporeal thing diffused throughout the whole body that gives it motion and life. Those who say that animals do not have a soul mean it in the second sense; for man never will deny that there is something corporeal in animals that is the principle of their life or movement, since we cannot even deny this of timepieces. On the other hand, those who claim that animals have souls mean it in the first sense, for there are few who believe that animals have a spiritual and indivisible soul. So the Peripatetics and the Cartesians believe that animals have a soul, i.e., a corporeal principle of their movement, and they both believe they do not have a soul, i.e., that there is nothing spiritual and indivisible in them.

Thus, the difference between Peripatetics and those we call Cartesians is not that the former believe animals have souls and the latter do not, but only that the former believe animals are capable of feeling pain and pleasure, of seeing colors, hearing sounds, and that they generally have all the sensations and passions we have, and that the Cartesians believe the opposite. The Cartesians distinguish terms of sensation to remove the equivocation from them. For example, they say that when we are too close to fire, parts of wood strike against the hand, disturbing its fibers, and that this disturbance is transmitted to the brain, where it determines the animal spirits contained there to be spread through the exterior parts of the body in a manner appropriate for making the hand withdraw. They agree that all these things or similar ones can be found in animals, and that they really are found there because they are but properties of the body. And the Peripatetics agree with this.

The Cartesians say further that in men the disturbance of brain fibers is accompanied by the sensation of heat, and that the flow of animal spirits toward the heart and viscera is followed by the passion of hatred or aversion. But they deny that these sensations and passions of the soul are encountered in animals. The Peripatetics claim on the contrary that animals feel this heat as well as we, that they are like us in their aversion to everything that inconveniences them, and generally that they are capable of all the sensations and passions that we experience. The Cartesians do not think that animals feel pain or pleasure, or that they hate or love anything, because they do not admit anything but the material in animals, and they do not believe that either sensations or passions are properties of matter in whatever form. Some Peripatetics, on the contrary, think that matter is capable of sensation and passion when it is, as they say, refined, that animals can sense by means of animal spirits, i.e., through an extremely subtle and delicate matter, and that even the soul is capable of sensation and passion only because it is joined to this matter.

Thus, to resolve the question of whether animals have a soul, we must retire within ourselves and consider our idea of matter as attentively as we can. And if we conceive that matter, shaped in a given way, such as a square, round, or oval, be pain, pleasure, heat, color, odor, sound, and so on, we can affirm that the soul of animals, however material it be, is capable of sensing. If we do not conceive it to be so, we must not assert it to be so, since we should affirm only what we conceive. Likewise, if we conceive that matter agitated upward, downward, in a circular, spiral, parabolic, or elliptical path, and so forth, be love, hate, joy, or sadness, and so forth, then we can say that animals have the same passions as we. If we do not perceive it to be so, we should not assert it to be so, unless we want to talk without knowing what we say. But I think I can affirm that no one will ever believe that any movement of matter can be love or joy, provided he thinks about it seriously. Hence, to resolve this question of whether animals sense, we have only to be careful to remove the ambiguities, as do those whom it pleases us to call Cartesians. By so doing, we shall reduce it to a question so simple that a middling concentration of mind will be sufficient to resolve it.

It is true that Saint Augustine, assuming with the common prejudice of all men that animals have a soul (at least I did not read that he ever seriously examined it in his works, or that he called it into question) and clearly perceiving that there is a contradiction in saying that a soul or a substance that thinks, feels, desires, and so on, is material, believed the soul of animals was indeed spiritual and indivisible.[a] He proved by very evident arguments that every soul, i.e., everything that feels, imagines, fears, desires, and so on, is necessarily spiritual; but I did not notice that he had any argument for asserting that animals have souls. He does not even put himself to the trouble of proving it, because there is every indication that in his time no one doubted it.

Currently, because there are people who try to deliver themselves from their prejudices completely and who call into question all opinions not founded upon clear and demonstrative reasoning, we begin to doubt whether animals have a soul capable of the same sensations and passions as ours. But there are always defenders of prejudice to be found, who claim to prove that animals sense, will, think, and reason even as we do, although in a more imperfect manner.

Dogs, they say, know their masters; they love them, suffer their blows with patience, because it is to their advantage not to abandon them, but they hate strangers in such a way that they cannot even tolerate being petted by them. All animals love their children; and those birds who make their nests at the ends of branches make it sufficiently apparent that they fear certain animals will devour them: they judge these branches too weak to support their enemies, and strong enough to support both their babies and nests. There are none, down to the spiders and most vile insects, that do not indicate some intelligence that animates them; for we cannot help admiring the conduct of an animal who, weak as it is, finds a way to surprise others with eyes and wings in its webs, and is hardy enough to attack the largest animals we see.

It is true that all actions performed by animals show intelligence, for everything regular signifies it. Even a watch shows it; it is impossible that its wheels are due to accident, and there has to be an intelligence that regulates its movements. We plant a seed upside down, and the roots, rising out of the ground, sink back into it of themselves; the seed that was turned downward in the earth also turns itself right side up to leave it; that indicates intelligence. The plant branches at intervals to strengthen itself, covers its seed with skin to protect it, surrounds itself with thorns to defend it; this indicates intelligence. In the end, everything we see done by plants as well as by animals, certainly signifies intelligence. All true Cartesians agree. But all true Cartesians make distinctions, for they try as best they can to remove ambiguity from terms.

The movements of animals and plants indicate intelligence, but this intelligence is not material; it is distinct from animals, as the intelligence that arranges the wheels of a watch is distinct from the watch. For at bottom this intelligence appears infinitely wise, infintely strong, and is the same one that formed us in our mothers' womb and gives us growth to which we cannot, by all the efforts of our mind and will, add a cubit. Thus, in animals, there is neither intelligence nor souls as ordinarily meant. They eat without pleasure, cry without pain, grow without knowing it; they desire nothing, fear nothing, know nothing; and if they act in a manner that demonstrates intelligence, it is because God, having made them in order to preserve them, made their bodies in such a way that they mechanically avoid what is capable of destroying them. Were this not the case, we should have to say that there is more intelligence in the smallest of animals, or even in a single seed, than in the most spiritual of men; for it invariably has more different parts and produces more regulated movements than we are capable of knowing.

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[a] Book 4 of *De anima et ejus origine*, chapter 23, "De quantitate animae," and elsewhere.

But as men are accustomed to confusing everything, they imagine their soul produces almost every movement and change that occurs in their bodies; they falsely attach to the word *soul* the idea of producer and guardian of the body. Thus, thinking that their soul produces in them all that is absolutely necessary for the preservation of their lives, although it does not even know how the body it animates is composed, they judge that there must be a soul in animals to produce in them all the motions and changes occurring in them because they are similar enough to those that occur in our bodies. For animals breed, nourish, fortify themselves like our bodies; they drink, eat, and sleep like us, because we are completely similar to animals as far as the body is concerned, and because we differ from them only in that we have a soul and they do not. But our soul does not form our body, it does not digest our food, it gives no movement and heat to our blood. It senses, wills, reasons; it animates the body in the sense that it has sensations and passions related to it. But it is not diffused in our members to communicate sensation and life to them, for our body can receive nothing from what is found in our mind. It is therefore clear that the reason we would not know how to resolve most questions is that we do not distinguish, and do not even think of distinguishing, the different things a single word means.

It is not that we do not sometimes think about distinguishing, but often we do it so badly that, instead of removing ambiguity from terms by the distinctions we give, we only make them more obscure. For example, when we ask if the body is alive, how it lives, and in what manner the rational soul animates it; whether the animal spirits, blood, and other humors are alive; whether teeth, hair, and nails are animated, and so on, we distinguish the words *to live* and *to be animated* into living or being animated by a rational soul or by a sensitive soul or by a vegetative soul. But this distinction only confuses the state of the question, for these words themselves need explanation; and it could even be that the last two, *vegetative* soul and *sensitive* soul, are inexplicable and incomprehensible in the way they are ordinarily meant.

But, if we want to attach some clear and distinct idea to the word *life*, we can say the life of the soul is the knowledge of truth and the love of good; or rather that its thought is its life, and that the life of the body consists in the circulation of blood and in the exact constitution of humors; or rather that the life of the body is the movement of its parts appropriate for its preservation. Then, the ideas attached to the word *life* being clear, it will be clear enough: (1) that the soul cannot transmit its life to the body, since it cannot make it think; (2) that it cannot give the body the life with which it nourishes itself, believes, and so on, since it does not even know what must be done to digest what we eat; (3) that it cannot make it sense, since matter is incapable of sensation, and so forth. We can finally resolve all other questions we can ask about this subject without difficulty, provided the terms that enunciate them arouse clear ideas; and it is impossible to resolve them, if the ideas of the terms that express them are confused and obscure.

Nevertheless, it is not always absolutely necessary to have ideas that perfectly represent the things whose relations one wants to examine. It often suffices to have an imperfect or initial knowledge of them, because often one does not seek to know their relations precisely. I shall explain this.

There are truths or relations of two kinds; there are some known exactly and others known only imperfectly. We know the relation between a particular square and a particular triangle precisely, but we know the relation between Paris and Orléans only imperfectly. We know that the square is equal to the triangle, or that it is double its size, or triple, and so on, but we know only that Paris is larger than Orléans without knowing by exactly how much.

Furthermore, there is an infinity of degrees among instances of imperfect knowledge, and in fact all of them are imperfect only in relation to more perfect ones. For example, we know perfectly that Paris is larger than the Place Royale; and this knowledge is imperfect only in relation to an exact knowledge, according to which we would know exactly by how much Paris is larger than this square it encloses.

Thus, there are questions of several sorts: (1) there are some in which we seek a perfect knowledge of all exact relations between two or more things; (2) there are some in which we seek perfect knowledge of some exact relation between two or more things; (3) there are some in which we seek perfect knowledge of some relation that approximates the exact relation between two or several things; (4) there are some in which we seek only to recognize a rather vague and indeterminate relation.

It is obvious, first, that to resolve the first type of question and to know perfectly all exact relations of quantity and quality between two or more things, it is necessary to have distinct ideas of them that represent them perfectly, and to compare these things in all possible ways. We can, for example, resolve all questions that lead to discovering exact relations between two and eight because, since two and eight are exactly known, we can compare them in all ways necessary for recognizing their exact relations of quantity or quality. We can know that eight is four times bigger than two, that eight and two are even numbers, that eight and two are not square numbers.

It is clear, in the second place, that to resolve questions of the second type, and to know exactly some relation of quantity or of quality between two or more things, it is necessary and sufficient to know their surfaces very distinctly, according to which we should compare them to discover the relation we seek between them. For example, to resolve some of the questions that lead to the discovery of exact relations between four and sixteen, such as that four and sixteen are even and square numbers, it is sufficient to know exactly that four and sixteen can be divided by half without fractions, and that both are the products of a number multiplied by itself, and it is useless to investigate their true magnitude. For it is obvious that to recognize exact relations of quality between things, it is sufficient to have a very distinct idea of their quality without thinking of their quantity, and that to know their exact quantitative relations, it is sufficient to know their quantity exactly without seeking their true quality.

It is clear, in the third place, that to resolve questions of the third type, and to know some relation that approximates the exact relation between two or more things, it suffices to know the surfaces or sides according to which one should compare them approximately in order to find the approximate relation one seeks, whether of quantity or of quality. For example, I can clearly know that $\sqrt{8}$ is greater than 2, because I can nearly know the true magnitude of $\sqrt{8}$; but I cannot know by how much $\sqrt{8}$ is greater than two, because I cannot know the true magnitude of $\sqrt{8}$ exactly.

Finally, it is obvious that to resolve questions of the fourth type, and to find vague and indeterminate relations, it suffices to know things in a manner proportionate to the need one has to compare them in order to find the relations one seeks. As a result, it is not always necessary, to resolve all sorts of questions, to have very distinct ideas of their terms, i.e., to know perfectly the things their terms signify. But our knowledge must be the more exact, since the relations we try to find are more exact and more numerous. For, as we have just seen, it suffices in imperfect questions to have imperfect ideas of the things we consider, in order to resolve these questions perfectly, i.e., according to what they contain. And we can even resolve quite a number of questions although we do not have a single distinct idea of the terms expressing them. For when we ask if fire is capable of melting salt, of hardening mud, of evaporating lead, and a thousand other similar things, we understand these questions perfectly, and we can resolve them quite well although we have no distinct idea of fire, salt, mud, and so on, for those who ask these questions only want to know if we have some sensible evidence that fire produced these effects. That is why we answer in a manner that satisfies them if we reply according to knowledge drawn from our senses.

BOOK SIX: PART TWO

Chapter Eight

An application of the other rules to particular questions.

There are two kinds of questions: simple and complex. The resolution of the first kind depends only on the singular attention of the mind to the clear ideas of the terms that express them. The other kind can be resolved only by comparison with a third or with several other ideas. We cannot find unknown relations expressed by the terms of the question by comparing the ideas of these terms directly, for they cannot be joined or compared. One or more intermediary ideas are needed then to make the comparisons necessary for finding these relations, and we must see to it that these intermediary ideas are the more clear and distinct, to the degree that we try to find more exact and more numerous relations.

This rule is but a conclusion from the first, and it is of equal importance. For if in order to know the relations of things being compared exactly we must have clear and distinct ideas of them, then for the same reason, it is necessary to have sound knowledge of the intermediary ideas by which we claim to make comparisons, since the relation of the measure to each thing measured must be known distinctly in order to discover its relations. Here are examples.

An explanation of magnetism.

When a very small and light vessel containing a magnet is allowed to float freely, if we present to the septentrional pole of this magnet the same pole of another magnet held between the hands, then at that moment we see that the first magnet withdraws as if it had been pushed by a violent wind. Now we wish to know the cause of this effect.

It is clear enough that to explain the movement of this magnet, it is not enough to know its relations to the other one, for even though they were all perfectly known, we could not understand how these two bodies could repel each other without meeting.

We must, then, investigate which things we know distinctly to be capable, according to the order of nature, of moving a body; for this is a question of finding the natural cause of the movement of the magnet, which is certainly a body. Thus, we must not resort to any quality, form, or to any entity not clearly known to be capable of moving bodies, not even to some intelligence, for we do not know with certitude that intelligences are the ordinary causes of the natural motions of bodies, nor even if they can produce motion.

We clearly know it to be a law of nature that bodies move each other when they collide. We should therefore try to explain the motion of the magnet by means of some body that comes in contact with it. It is true that something other than a body might possibly move it; but if we have no distinct idea of this thing, we should not use it as an admissible means for finding what we seek, nor for explaining it to others. For it is not giving an explanation of an effect to give as its cause a thing that no one clearly conceives. We must not, then, trouble ourselves about whether there is, or is not, some natural cause of the motion of bodies other than their collison; rather, we must assume that there is none, and then carefully consider which body can collide with and move this magnet.

We see first of all that it is not the magnet held in the hand, since it does not touch the one that moves. But because it moves only at the approach of the one that is held in the hand, and not by itself, we must conclude that even though it is not the magnet in the hand that moves the magnet in the water, there must be some small bodies that leave the hand-held magnet, and are pushed by it toward the other magnet.

To discover these tiny bodies, we need not open our eyes and approach this magnet; for the senses will impose upon reason, and we shall perhaps judge that nothing emanates from the magnet because we see nothing emanating from it. Perhaps we shall not recall that we do not see winds, even the most impetuous ones, nor the subtle matter that initially produces all natural effects.[a] We must firmly adhere to this very clear and intelligible method, and carefully examine all the effects of the magnet, in order to discover how it can constantly push these tiny bodies outside itself without being diminished. For our experiments will reveal that these tiny bodies, which leave through one side, immediately reenter through the other, and they will serve to explain all difficulties we form against this resolution of the question. But it must be carefully observed that this method should not be abandoned, even though one could not respond to certain difficulties because of our ignorance of many things.

If we wish to investigate the explanation not of why magnets repel one another when their poles are opposed, but rather of their mutual attraction and the fact that they unite when the north pole of one is presented to the south pole of the other, the question will be more difficult, and a single method will not suffice to resolve it. It is not enough to know the relations between the poles of these magnets precisely, nor to resort to the method used for the preceding question, for this method seems on the contrary to impede the effect whose cause we would seek. Neither must we resort to any of the things we do not clearly know to be the natural and ordinary causes of corporeal motions, nor deliver ourselves from the difficulty of the question by the vague and indeterminate idea of an *occult quality* in the magnets by which they attract each other; for the mind can clearly conceive only that one body can attract another body.

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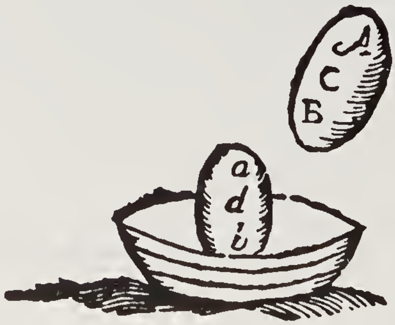
[a] The proof of this will be found in the sixteenth Elucidation.

The impenetrability of bodies makes it clearly conceivable that motion can be communicated by impulsion, and experience proves, without the slightest obscurity, that in actual fact it is communicated in this way. But there is not a single argument or experiment that clearly demonstrates the motion of *attraction;* for, in the experiments that seem the most proper to prove this type of motion, we readily acknowledge, when we discover its true and certain cause, that what appeared to happen by attraction really happens only by impulsion. Thus, we must not be detained by any theory of the communication of motion other than that which states that motion occurs through impulsion, because this manner of communication is certain and incontestable, and because there is at least some obscurity in all the others imaginable. But even though it could be demonstrated that purely corporeal things have causes of motion other than the collision of bodies, we could not reasonably reject this theory. This is even preferable to any other, since it is the clearest and most obvious, and appears so incontestable that I am not afraid to assert that it has been accepted by all peoples and in all times.

Experience shows that a magnet, floating freely on water, approaches one held in the hand when a certain side is presented to it; it must then be concluded that it is pushed toward it. But since it is not the magnet we hold that pushes the floating one, since the floating one approaches it, and since nevertheless the floating one would not be moved if it were not presented to the one held in the hand, it is obviously necessary to resort to at least two methods to explain this question if we want to resolve it through the accepted principle of the communication of motion.



Magnet (d) approaches magnet (C); therefore, the air, or the fluid, invisible matter that surrounds it, pushes it, since there is no other body that can. That is the first method. Magnet (d) approaches only at the presence of magnet (C); therefore, it is necessary that magnet (C) causes the air to push magnet (d), and that is the second method. It is obvious that these two methods are absolutely necessary. Thus, the difficulty is presently reduced to a matter of joining them together, which can be done in two ways: either by beginning with some known thing in the air around magnet (d), or by beginning with some known thing in magnet (C).

If you know that the particles of air and of all fluid bodies are in continual agitation, you will be unable to doubt that they strike constantly against magnet (d), which they surround. And because they strike it equally from all sides, they do not press upon it more on one side than another, so long as there is as much air or subtle matter on one side as on the other. This being the case, it is easy to judge that magnet (C) prevents there being as much of this air we speak of around (a) as around (b). But that can only be done by scattering some other bodies in the space between (C) and (d); there must be, then, some tiny bodies emitted by the magnets to occupy this space. And this is also what experiment shows,[a] when filings of iron are scattered around a magnet; for these filings make the path of these tiny invisible bodies visible. Since these tiny bodies drive the air around (a) away, magnet (d) is less pressured by the air on this side than on the other, and consequently it must draw near magnet (C), since every body must move in the direction from whence it receives the least thrust.

But if magnet (d) did not have several pores toward pole (a) suited for receiving the tiny bodies emitted from pole (B) of the other magnet, and too small to receive those of the air, heavy as well as light, it is obvious that these tiny bodies, being more agitated than this air (since they must drive it away from between the magnets), would push magnet (d) and move it away from (C). Thus, since magnet (d) approaches or draws away from (C) when it is presented with different poles, we must conclude that the tiny bodies emitted from magnet (C) pass freely and without repelling magnet (d) through side (a) while repelling it from side (b). What I say of one of these magnets must also be understood of the other.

It is clear that we always learn something through this manner of reasoning on clear ideas and incontestable principles. For it has been discovered that the air around magnet (d) was driven from between the magnets by bodies constantly emitted from their poles, and which find their passage free on one side and blocked on the other. And if we wanted to discover the approximate size and number of the pores of the magnet [through] which these tiny bodies pass, it would be necessary to perform still more experiments; but that would take us where we do not want to go, and where we could very well be led astray. We can consult the principles of Descartes's philosophy on these questions, not in order to follow the views of this learned philosopher blindly, but to accustom ourselves to his method of doing philosophy. To respond to an objection that occurs at the outset, namely, the explanation of how it happens that these tiny bodies cannot re-enter through the pores from which they left, I say only this: that aside from a determined size or shape capable of producing this effect, the inflexion of the tiny branches that compose these pores can conform to the tiny bodies that traverse them in one direction, and become bristled and close the passage to them in the other direction. The continual flow of the subtle matter from one pole to the other in the pores of the magnet even suffices to keep it from reentering by the pores from which it was emitted; for a part of this matter cannot overcome this current in order to make a passage for itself through the pores from which it was emitted nor through those of the same pole which have an opposite flow. Thus, we need not be too surprised at the difference in the poles of the magnet; for this difference can be explained in many ways, and the only difficulty is in recognizing the true one.

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[a] See Descartes's *Principles of Philosophy*, part 4.

If we had tried to resolve the question just examined by beginning with the tiny bodies supposedly emitted from magnet (C), we would have found the same thing; and we would also have discovered that air, gross as well as subtle, is composed of an infinity of parts in a state of continual agitation. For without that it would be impossible for magnet (d) to draw near magnet (C). I do not pause to explain this because it is not difficult.

The search for the cause of the movement of our members.

Here is a more complex question than the preceding ones, which requires us to use several rules. The question is: what can be the natural, mechanical cause of the movement of our members?

The idea of a natural cause is clear and distinct, if it is understood as I explained it in the preceding question; but the term *movement* when applied to our members is ambiguous and confused, for there are several kinds of these movements; voluntary, natural and convulsive ones. There are also different members in the human body. Thus, according to the first rule, I must ask which of these movements it is whose cause we wish to know. But if the question is left indeterminate, to be used at my discretion, then I examine it as follows:

I attentively consider the properties of these movements; and because I discover at the outset that voluntary movements are ordinarily made more promptly than convulsive ones, I conclude from this that their cause might be different. Thus, I can and consequently should examine the question in parts; for it appears to require a long discussion.

First of all, I confine myself to considering only voluntary movement; and because we have several parts used in these movements, I consider only the arms. I observe then that the arm is composed of several muscles, nearly all of which have some action when we lift or move an object in various ways. But I confine myself only to one, being willing to assume that the others are formed in approximately the same manner. I learn of its composition from some anatomy book, or rather from sensibly seeing its fibers and tendons, which I have had dissected by some skillful anatomist of whom I ask questions that could later on bring to mind some means of finding what I seek.

Therefore, considering all things with care, I cannot doubt that the principle of my arm's movement depends on the contraction of the muscles composing it. And if I am willing, in order not to burden myself with too many things, to suppose according to common opinion that this contraction occurs by means of animal spirits that fill the insides of these muscles and that thus approach their extremities, the whole question regarding voluntary movement will be reduced to knowing how the small quantity of animal spirits contained in an arm can suddenly swell its muscles according to the orders of the will with sufficient force to lift a load of a hundred pounds and more.

When we meditate upon this with some concentration, the first method that presents itself to the imagination is usually that of some swift and violent effervescence similar to that of gunpowder, or of certain liquors filled with alkaline salts, when they are mixed with those that are fixed or full of acid salt. A small amount of gunpowder is capable, when lit, of lifting not only a load of a hundred pounds but a tower or even a mountain. Earthquakes that turn cities upside-down and jolt entire provinces are also made by spirits ignited underground approximately like gunpowder. Thus, by assuming the existence of a cause of the fermentation and expansion of spirits in the arm, this cause might be said to be the principle of the strength men have for making such swift and violent movements.

Nevertheless, since we should be suspicious of these methods that enter the mind only through the senses and of which we have no clear and evident knowledge, we should not be so quick to use this one. For in the end it does not suffice to explain the strength and swiftness of our movements through a comparison. This explanation is confused, and, furthermore, it is imperfect; for here a voluntary movement must be explained, and fermentation is not voluntary. Blood is fermented to excess in fevers, and it cannot be stopped. The spirits are inflamed and agitated in the brain, and their agitation does not diminish in accordance with our wishes. When a man moves his arm in various ways, it would be necessary, according to this explanation, that he cause a million fermentations, large and tiny, swift and slow, which begin, and (what is still more difficult to explain according to this supposition) which end the moment he wants them to. It would be necessary for these fermentations not to disperse all their matter, and for this matter to be always ready to ignite. When a man has walked ten leagues, how many thousand times must the muscles used in walking be filled and emptied? And what quantity of spirits must there be if fermentation dissipates and deadens them with every step? This explanation is therefore imperfect for explaining the movements of our bodies that depend entirely on our will.

It is obvious that the essence of the present question consists in this problem of mechanics: *to find through pneumatic machines the means to overcome a force such as a hundredweight by another force as tiny as we may wish, such as one of an ounce; and that the application of this lesser force be dependent upon the will in order to produce its effect.* Now, this problem is easy to resolve and its demonstration is clear.

It can be resolved with a vessel with two openings, one slightly more than 1,600 times bigger than the other, in which the pipes of two bellows of equal size are inserted. Apply a force only 1,600 times greater than the other to the bellows in the larger opening, and the force that is 1,600 times smaller will overcome the larger. And the proof of this is clear in mechanics, since the forces are not exactly in proportion to the openings, and because the relation of the small force to the small opening is greater than the relation of the greater force to the large opening.

But to resolve this problem with a machine that represents the effect of muscles better than did the one just given, we blow slightly into a balloon and then put a stone weighing 6 or 7 hundredweight on this half-inflated balloon; or, having laid it on a table, cover it with a board and cover the board with a large stone, or make a very heavy man sit down on this board, even allowing him to keep hold of something in order to resist the swelling of the balloon; for if someone blows anew into this balloon, even with the unaided mouth, it will raise the stone that compresses it or the man sitting on it, provided the channel through which the wind enters the balloon has a plug that keeps it from leaving when it is necessary to take a breath. The reason for this is that the opening of the balloon is so small, or must be assumed so small in relation to the entire capacity of the balloon resisting the weight of the stone, that a very small force is thus capable of overcoming a very great one.

If we also consider that the breath alone is capable of violently propelling a lead ball by means of a blowgun (because the force of breath is not dissipated and is constantly renewed), we will clearly recognize that, given the necessary proportion between the opening and the capacity of the balloon, breath alone can easily overcome very great forces.

If, therefore, we conceive that entire muscles or each of the fibers composing them, like this balloon, have a capacity appropriate for receiving animal spirits; that the pores through which the spirits thread their way are perhaps proportionately smaller than the neck of a bladder or the hole of a balloon; that the spirits are retained and pushed in the nerves approximately like the breath in the blowgun, and that the spirits are more agitated than the air of the lungs, and pushed with more force in the muscles than the air is in balloons; then we will recognize that the motion of spirits that expand in the muscles can overcome the force of the heaviest loads we carry, and that if we cannot carry heavier ones, the lack of strength is due not so much to the spirits as to the fibers and skins composing the muscles, which would burst if we made too much effort. Furthermore, if we notice that by virtue of the laws of the union of soul and body, the motions of these spirits, with respect to their determination, are dependent upon the will of men, then we will see clearly that the movements of the arms must be voluntary.

It is true that we move our arms with such swiftness that at first it seems unbelievable that the effusion of spirits in the muscles that compose it could be swift enough to explain this. But we should consider that these spirits are extremely agitated, always ready to pass from one muscle into another, and that it does not take very much of them to swell the muscles the little bit necessary to move just them alone, or when we lift something very light. When we have something heavy to lift, we cannot do it very swiftly, because if loads are heavy, the muscles must be tightened and swelled a great deal; and to swell them in this way, there must be more spirits than there are in the neighboring or opposing muscles. It therefore takes a little time to make these spirits come from some distance, and in order to push a quantity of them capable of resisting the weight. Thus, those who are laden cannot run, and those who lift a heavy object from the ground do not do it as swiftly as those who lift a straw.

Let us reflect further that those who have more fire or a little wine in their heads are swifter than others; that among animals, those who have more agitated spirits, such as birds, move more swiftly than those with cold blood such as frogs, and that there are even some, such as the chameleon, the tortoise, and some insects, whose spirits are agitated so little that their muscles are not filled any more swiftly than a small balloon into which one would blow. If we carefully consider all these things, we may find the explanation just given acceptable.

But although this part of the proposed question concerning voluntary movement be sufficiently resolved, we nevertheless should not assert that it is entirely resolved and that there is nothing more in our bodies that contributes to these movements than what has been said. For apparently there are a thousand springs in our muscles that facilitate these movements with the motion they receive from the subtle matter and blood of the arteries, and which will be eternally unknown even to those who make the best guesses about the works of God.

The second part of the question to be examined is concerned with natural movements, or those involving nothing extraordinary, as do convulsive movements, but which are absolutely necessary for the preservation of the machine, and which consequently do not depend upon our wills.

I therefore consider first of all, with all the attention of which I am capable, what motions meet these conditions, and whether they are entirely similar. But because I recognize from the outset that they are nearly all different from one another, I stop only with the movement of the heart, in order not to burden myself with too many things. This part is the best known, and its movements the most sensible. I therefore examine its structure, and notice two things among several others; first, that it is composed of fibers like other muscles; second, that it has two very considerable cavities. I judge, therefore, that since it is a muscle, its movement can occur by means of animal spirits, and that since it has cavities, the blood is fermented and dilated there. The first of these judgments is based upon what I have just said, and the second upon the fact that the heart is much hotter than the other parts of the body; that it is the part that diffuses heat with the blood throughout all our members; that these two cavities could have been preserved only by the diffusion of blood, and that therefore they are useful to the cause that produced them. I can then sufficiently explain the movement of the heart through the spirits that agitate it and the blood that diffuses it when this blood is fermented; for even if the cause of its movement that I posit is not the true one, it appears certain to me that it is sufficient to produce it.

It is true that the principle of fermentation or dilation of liquors is perhaps not sufficiently well known to all those who will read this for me to claim to have explained an effect when I have generally shown that its cause is fermentation. But one should not resolve all particular questions by going back to first causes. It is not that we cannot go back and thus discover the true system on which all particular effects depend, provided we accept only clear ideas; but this manner of doing philosophy is neither the shortest nor the most correct.

To understand what I mean, it is necessary to know that there are two kinds of questions. In the first, it is a matter of discovering the nature and properties of some thing; in the others, we wish only to know whether such and such a thing has such and such a property; or, if we know that it has such a property, we want only to discover its cause.

To resolve questions of the first type, things must be considered in their origin, and they must be conceived as being constructed in the simplest and most natural ways. One must undertake the resolution of the others in a very different manner: it is necessary to resolve them through hypotheses, and to examine whether these hypotheses lead to some absurdity or to some clearly known truth.

If, for example, we want to discover the properties of the *cycloid* or one of the *conic sections*, we must consider the construction of these lines, and form them according to the simplest and least confusing means; for that is the best and shortest road for discovering their nature and properties. We see without difficulty that the subtangent of the cycloid is equal to the circle that formed it; and if we do not easily discover many of its properties by this means, it is because the circular line forming it is not sufficiently understood. But for purely mathematical lines, or those whose relations can be more clearly known such as conic sections, it is sufficient for discovering many of their properties to consider their construction. We must only be careful that since construction is possible by regulated motions in several ways, every type of construction is not equally appropriate for enlightening the mind; the simplest are the best, and it happens nevertheless that certain particular ways are more appropriate than others for demonstrating certain particular properties.

But if it is not a question of discovering the properties in general of a thing but of knowing whether a thing has a certain property, then we must assume that it does in fact have it, and carefully examine what must follow from this assumption, whether it leads to a manifest absurdity or to some incontestable truth that can serve as a means for discovering what we seek. This is the method that geometers use to resolve their problems. They assume what they seek and investigate what must follow from it; they carefully consider the relations resulting from their hypothesis; they represent all these relations, which set the conditions of the problem by *equations*, and they then reduce the *equations* according to the rules they have for them, so that the unknown element is found to be equal to one or several completely known things.

If then it is a question of discovering the nature of fire and of the different fermentations generally, which are the most universal causes of natural effects, I say that the shortest and surest method is to examine the question at its roots. We must consider the formation of the most agitated bodies, whose motion is spread among those that are fermented. It is necessary, through clear ideas and by the simplest methods, to investigate what this motion can produce in matter; and because fire and the different fermentations are very general things, which consequently depend upon few causes, we shall not need to consider what matter can do when animated by motion for very long in order to recognize the nature of fermentation in its principle.[a] At the same time we shall learn several other things absolutely necessary for understanding physics. On the other hand, if we wanted to reason upon this question by using hypotheses, in order thus to go back to first causes and right to the natural laws according to which all things are formed, we would make many false assumptions that would accomplish nothing.

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[a] See the sixteenth Elucidation, from my discussion of the generation of fire to the end.

We could easily recognize that the cause of fermentation is the motion of an invisible material transmitted to the parts of the agitated matter; for it is well known that fire and the different fermentations of bodies consist in their agitation, and that, by the laws of nature, bodies only receive their motion immediately through collision with other, more agitated ones. Thus, we could discover that there is an invisible material whose agitation is transmitted to visible bodies through fermentation. But it would be morally impossible to discover how this happens if we use the hypothetical method [*par la voye des suppositions*], and it is not nearly so difficult to discover it by examining the formation of the elements or bodies, of which there are more of like nature, as we can see in part through Descartes's system.

The third part of the question, which concerns convulsive movements, will not be extremely difficult to resolve, provided we assume there are animal spirits in the body capable of some fermentation, and humors sufficiently penetrating to thread their way through the pores of the nerves through which the spirits are distributed in the muscles; and provided also that we do not claim to determine the true disposition of the invisible parts that contribute to these convulsive movements.

When a muscle has been separated from the rest of the body and is held by the extremities, we see that it makes an effort to contract itself when it is pricked through the middle. It appears that this depends on the construction of the imperceptible parts composing it that, like so many springs, are caused to move in certain ways by the puncture. But who could be assured of having found the true disposition of the parts that produce this movement, and who could give it an incontestable demonstration? Certainly this appears impossible, although perhaps, by dint of thinking about it, we could imagine a construction of muscles appropriate for causing all the movements of which we see them to be capable. It is not necessary then to worry about determining the actual construction of muscles. But because we cannot reasonably doubt that there are spirits susceptible to some fermentation through the mixture of some subtle material, and because acrid and pungent humors cannot thread their way into the nerves, we can assume this construction.

To resolve the proposed question, it is therefore first of all necessary to examine how many kinds of convulsive movements there are; and because their number appears infinite, we must deal only with the principal ones, whose causes seem to be different. It is necessary to consider the parts in which they occur, the illnesses preceding and following them, whether they occur with or without pain, and above all, their rapidity and violence. For there are some that occur with rapidity and violence, others with rapidity but no violence, still others with violence but no rapidity, and finally others without either violence or rapidity. Some of them are constantly stopping and then recurring, and there are some that keep the limbs still and immobile for some time, while others make them completely useless and disfigure them.

All these things considered, it is not difficult to explain in general how these convulsive movements can occur after what was just said about natural and voluntary movements. For if we imagine that some matter capable of fermenting the spirits contained in muscle is mixed with those spirits, the muscle will be swollen and will produce a convulsive movement in this part.

If this movement can be easily resisted, it will be a sign that the nerves are not plugged by some humor, since we can empty the muscle of the spirits that have entered it and cause them to swell the opposing muscle; but if we cannot do so, it must be concluded that sharp and penetrating humors play at least some role in this movement. It can sometimes even happen that these humors are the only cause of the convulsive movements; for they can direct the flow of the spirits toward certain muscles by opening the passages that carry them there and by closing the others, in addition to which they can contract the muscles' tendons and fibers by penetrating their pores.

When a very heavy weight hangs at the end of a cord, we noticeably raise it by merely wetting this cord, because particles of the water threading their way like so many tiny wedges between the threads composing the cords, shorten the cord by thickening it. Likewise the sharp and penetrating humors contract the nerves by threading their way into their pores, and pull the parts attached to them, producing extremely slow, violent, and painful convulsive movements in the body, which leave the part extraordinarily contorted for a considerable time.

Convulsive movements that occur rapidly are caused by spirits; but it is not necessary that the spirits undergo any fermentation. For that, it suffices that the channels through which they pass are more open from one side than from another.

When all parts of the body are in their normal state, the animal spirits expand in them equally and swiftly in relation to the need of the machine, and they faithfully execute the orders of the will. But when the humors disturb the disposition of the brain, and when they change or move the openings of the nerves in various ways, or when penetrating into the muscles, they elasticize them, the spirits are distributed in the parts in a totally new way and produce extraordinary movements without the will having any part in it.

Nevertheless, we can sometimes, through strong resistance, hinder some of these movements, and even gradually diminish the traces that produce them, even though the habit be completely formed. Those who are careful about them avoid grimacing or assuming an indecent air or posture easily enough, although the body be disposed to do so. They even surmount these things when fortified by habit, but with much more difficulty, for it is always necessary to combat them at the start and before the flow of the spirits has made a path too difficult to block.

The cause of these movements is sometimes in the agitated muscle, some irrating humor, or fermenting spirits. But we must judge that the cause is in the brain, especially when the convulsions agitate not only one or two parts of the body in particular but nearly all of them, and again in several illnesses that change the natural constitution of blood and spirits.

It is true that <since> a single nerve sometimes has different branches spread through remote parts of the body, as in the case of the face and entrails, it often happens that the convulsion, having its cause in a part in which one of the nerve's branches is inserted, can be transmitted to those where the other branches correspond, without the brain being the cause of the convulsion, or the spirits being corrupted.

But when convulsive movements are common to nearly all parts of the body, it must be said that the spirits are fermented in an extraordinary manner, or that the order and arrangement of the parts of the brain is disturbed, or both. I shall not spend any more time upon this question, for it becomes so complex and depends on so many things, when one descends to the particular, that it cannot easily serve to illustrate clearly the rules that have been given.

There is no science that furnishes more examples appropriate for showing the usefulness of these rules than geometry, and especially algebra. For these two sciences make constant use of them. Geometry clearly shows the ncesssity of always beginning with the simplest things containing fewest relations. It always investigates these relationships through clearly known measures; it removes whatever is of no use in order to discover them; it divides complex questions into parts; it arranges these parts and examines them in order. In the end, the only fault encountered in this science is, as I have already said elsewhere, that it has no really appropriate way to simplify the ideas and relations that are discovered. Thus, although it regulates the imagination and makes the mind precise, it does not add much to its scope, and does not make it capable of discovering very complex truths.

But algebra, by teaching us to simplify continually, and in the shortest way, greatly augments the capacity of the mind. For we can conceive nothing so complex in relations of size that the mind cannot, with time, discover it through the means furnished by algebra, once we know the path it must take.

The fifth rule and the others, where the way to simplify ideas is discussed, considers only this science, for we do not find a convenient way to simplify them in the other sciences. Thus, I shall not pause to explain them. Those who have a strong inclination toward mathematics and who want to give their minds all the strength and breadth of which they are capable, and thereby to place themselves in a position to discover for themselves an infinity of new truths, will if they seriously apply themselves to algebra recognize that this science is useful in the quest for truth because it observes the rules we have prescribed. But I warn that by algebra, I mean principally the algebra that Descartes and some others used.

Before finishing this work, I am going to give a slightly extended example, the better to illustrate the utility to be derived from this sixth book. In this example, I present the steps to be taken by a mind wishing to free itself from its prejudices in order to consider a fairly important question. I even cause it to fall into some error at first so that the memory of what I have stated elsewhere will be revived. But since the mind's attention leads it in the end to the truth it searches after, I cause it to speak positively, like a man who claims to have resolved the question he has examined.

BOOK SIX: PART TWO

Chapter Nine

A last example to show the utility of this work. In this example, we seek the physical cause of hardness or of the union of the parts of bodies.

Bodies are bound together in three ways: *continuity, contiguity,* and in a third manner that has no particular name, but that I shall call by the general term *union*.

By *continuity,* or by the cause of continuity, I mean that unknown something I am trying to discover that makes the parts of a body hold so tightly to each other that effort is needed to separate them, and that causes them to be regarded not as just together, but as a whole.

By *contiguity*, I mean that unknown something that makes me judge that two bodies touch immediately so there is nothing between them, but not that they are closely bound because I can easily separate them.

By this third term, *union*, I mean once more an unknown something that causes two glasses or two slabs of marble, whose surfaces have been used and polished by rubbing them against each other, to be attached in such a way that even though they can be very easily separated by sliding them, we still have some difficulty doing it in any other way.

Now this is not *continuity*, since these two glasses or slabs of marble, being united in this manner, are not conceived merely as making a whole, because there is a way they can be separated with great ease. Neither is it simply *contiguity* although it is very near to it, because these two pieces of glass or marble are quite tightly united, even much more than the parts of soft or liquid bodies, such as those of butter and water.

Our terms being defined, we must now seek the cause that unites bodies and the differences between the *continuity, contiguity,* and *union* of bodies according to the sense I have determined. I will first seek the cause of *continuity*, or what that unknown thing is which makes the parts of a hard body hold so tightly to each other that effort is required to separate them, and which causes them to be regarded not as being together but as a whole. I hope that once this cause is found, there will not be great difficulty in discovering the rest.

It now seems to me that this indefinable something that binds even the tiniest parts of this piece of iron I hold in my hands must be something very strong, since I must make a very great effort to break off a small part. But am I not in error? Is it not possible that this difficulty I have in breaking off the tiniest piece of iron comes from my weakness and not from the resistance of this iron? For I remember that at other times I made more effort than I am making now to break off a piece of iron like the one I am holding; and if I were sick, perhaps I could not succeed even with very great effort. I see clearly that I should not judge so absolutely of the firmness with which the parts of iron are joined together on the basis of the efforts I make to disunite them. I should only judge that they hold very strongly to one another in relation to my small strength; or that they are held more strongly than the parts of my flesh, since the sensations of pain I have when I exert too much effort warn me that I will disunite the parts of my body sooner than those of the iron.

I recognize then that even as I am neither absolutely strong nor absolutely weak, likewise iron or other bodies are neither absolutely hard nor absolutely flexible, but only in relation to the cause acting against them, and that the efforts I make can serve as a rule to measure the magnitude of the force needed to conquer the resistance and hardness of iron. For rules must be invariable, and these efforts vary according to the times, the abundance of animal spirits, and the hardness of flesh, since I cannot always produce the same effects by making the same efforts.

This reflection delivers me from a prejudice I had that made me imagine <that it would take> strong bonds to unite bodies, which bonds perhaps do not exist; and I hope that it will not be useless to me in what follows, for I have an extreme propensity to judge everything in relation to myself and to follow the impressions of my senses, which I will guard against with more care. But let us continue.

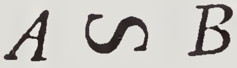
After having thought a while and searched with some application for the cause of this tight union without having been able to discover anything, I feel carried by my simplicity and my nature to judge, like several others, that it is the form of bodies that preserves the union between their parts, or the attraction and inclination they have for their fellows, for there is nothing easier than letting oneself be beguiled and thus becoming wise all at once, at little cost.

But since I do not want to believe anything that I do not know, I must not let myself be defeated in this way by my own laziness, nor must I surrender to mere glimmerings [*simples lueurs*]. Therefore, let us leave these forms and inclinations of which we have no distinct and particular ideas but only confused and general ones that we form, it seems to me, only in relation to our nature, and whose very existence several people and perhaps even entire nations doubt.

I seem to see the cause of this tight union of the parts composing hard bodies without admitting in it anything else except what everyone agrees is there, or at least everything everyone distinctly conceives to be capable of being there. For everyone knows distinctly that all bodies are composed, or can be composed, of small parts. Thus, it might happen that some will be crooked and branched, like tiny bonds capable of forcefully binding the others; or that they will completely intertwine themselves in their branches, so that we will not be able to disunite them easily.

I have a strong inclination to give in to this thought, and it is all the stronger when I see that the visible parts of heavy bodies are bound and united to each other in this manner. But I could hardly distrust the preoccupations and impressions of my senses too much. I must therefore once again examine the thing more closely, and I must even seek the explanation of why the tiniest and least solid parts of bodies (in a word, the very parts that make up each of these bonds) are held together. For they cannot be united by other, still smaller bonds, since I assume them to be solid. Or if I say that they are united in this way, I will be asked, and with reason, what will unite these others together, and so on to infinity.

As a result, the knot of the question now is to know how the parts of these tiny bonds or branched parts can be as tightly united together as they are, A, for example, with B, which I assume to be parts of a tiny bond. Or (what is the same thing), since bodies are all the harder as they are the more solid and have fewer pores, the question now is to know how the parts of a column composed of a material that would not have a single pore can be strongly joined together and compose a very hard body, for it cannot be said that the parts of this column are held by tiny bonds, since, being supposedly without pores, they have no particular figures.

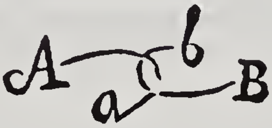


I still feel extremely inclined to say that this column is hard by its *nature*, or that the tiny bonds with which hard bodies are composed are atoms whose parts cannot be divided as being the essential and last parts of bodies, and which are *essentially* crooked or branched, or of a confused figure.

But I frankly recognize that this is not to explain the difficulty and that, leaving the preoccupations and illusions of my senses, I would be wrong to resort to an abstract form and to embrace a phantom of logic as the cause I see; I mean that I would be wrong to conceive the vague idea of *nature* or *essence*, which expresses only what is known, as something real and distinct, and thus to take an abstract and universal form as a physical cause of a very real effect. For there are two things I can hardly distrust enough. The first is the impression of my senses, and the other is the facility I have for taking abstract natures and the general ideas of logic for real and particular ones, and I remember having been beguiled several times by these two sources of error.

For, to return to the difficulty, it is not possible for me to conceive how these tiny bonds would be indivisible by their essence and nature, nor how they would consequently be inflexible, since on the contrary I conceive them to be very divisible, and necessarily so, by their essence and nature. For part A is very certainly a substance as well as B, and consequently it is clear that A can exist without B or separated from B, since substances can exist without one another, because otherwise they would not be substances.

To say that A is not a substance—that cannot be; for I can conceive it without thinking of B, and everything that can be conceived of alone is not a mode, since only modes or ways of being cannot be conceived alone or without the beings whose modes they are. Therefore A, not being a mode, is a substance, since every being is necessarily either a substance or a mode of being. For in the end all that is can either be conceived of alone or it cannot; there is no middle in contradictory propositions, and being or substance is called that which can be conceived of and consequently created alone. Part A can therefore exist without part B, and to state it more strongly, it can exist separately from B. So that this bond is divisible in A and B.



Furthermore, if this bond were indivisible or crooked by its nature and essence, the complete opposite of what we see through experience would occur, for one would not be able to break off any body. Let us suppose, as previously, that a piece of iron is composed of an infinity of tiny bonds intertwined with each other, of which A, a, and B, b, are two. I say that we could not disengage them, and consequently we could not break this iron apart; for in order to break it apart, it would be necessary to bend the bonds composing it, which, however, are assumed to be inflexible by essence and nature.

But if one does not suppose them to be inflexible but only indivisible by their nature, the supposition will serve no purpose in resolving the question. For then the difficulty will be to know why it is that these tiny bonds do not obey an effort to bend a bar of iron. Nevertheless, if we do not suppose them to be inflexible, we should not suppose them to be indivisible. For if the parts of these bonds could change situations in relation to one another, it is obvious that they could be separated, since there is no reason why, if one part could be removed from the other at all, it could not be completely removed. Therefore, we cannot resolve the question whether we suppose these tiny bonds to be inflexible or indivisible. For whether we suppose them to be indivisible, or inflexible, it will be impossible to break it, since the tiny bonds composing the iron being entangled in each other, it will be impossible to disengage them. Therefore, let us try to resolve the difficulty through clear and incontestable principles and to find the explanation of why this tiny bond has these two parts, A and B, so strongly attached to each other.

I clearly see that it is necessary for me to divide the subject of my meditation into parts in order to examine it more exactly and with less mental effort since I could not at first, from a simple view and with all the attention of which I am capable, discover what I was seeking. And that is what I was able to do from the beginning, for when the subjects one is considering are somewhat obscure, it is always best to examine them only by parts, and not to tire oneself uselessly with false hopes of luckily encountering the answers.

What I seek is the cause of the tight union found between the tiny parts that compose the tiny bond A, B. Now there are only three things I distinctly conceive that might be the cause I seek, namely: the parts of this tiny bond themselves, or the will of the Author of nature, or finally the invisible bodies that surround these tiny bonds. I might still produce, as a cause for these two things, the form of the bodies, the qualities of hardness or some occult quality, the harmony that would exist between parts of the same type, and so on. But because I have no distinct idea of these lovely things, I neither should nor can apply my reasonings to them. As a result, if I do not find the cause I seek in things of which I have distinct ideas, I will not fruitlessly trouble myself with the contemplation of these vague and general ideas of logic; and I will stop wanting to speak about things I do not understand. But let us examine the first of these things that can be the cause of the strong attachment of the parts of this tiny bond, namely, the parts composing it.

When I consider only the parts of which hard bodies are composed, I feel inclined to believe that: *one cannot imagine any cement uniting the parts of this bond, other than the parts themselves and their own rest; for of what nature could it be? It will not be a thing that subsists in itself; for, all these tiny parts being substances, how would they be united by substances other than themselves? Neither will it be a quality different from rest, because there is no quality more contrary to motion that could separate these parts than the rest that is in them; but aside from substances and their qualities, we do not know that there are other kinds of things.*[a]

It is quite true that the parts of hard bodies remain united to the extent that they are at rest beside each other, and that once they are in a state of rest, they continue by themselves to remain so as much as possible. But this is not what I am seeking; I am not looking for the explanation of why the parts of hard bodies are in rest next to each other; I am trying here to discover why it is that the parts of these bodies have the force to remain in a state of rest alongside each other, and why they resist any effort made to stir or separate them.

I could still tell myself[b] that each body truly has the force to remain in the state it is in, and that this force is equal for motion and rest. But the thing that makes the parts of hard bodies remain at rest alongside each other,[c] and that causes difficulty in separating and agitating them, is that not enough motion is employed to overcome their rest. This is probable, but I seek certitude, if it can be found, and not merely probability. And how can I know with certitude and clarity that each body has this force to remain in the state it is in, and that this force is equal for motion and rest, since matter appears on the contrary to be indifferent to motion and rest, and absolutely without any force? Let us go, then, as did

[a] Descartes, *Principles*, art. 55 of pt. 2.

[b] Descartes, art. 43 of the same part.

[c] Art. 63.

Descartes, to the will of the Creator, which perhaps is the force that bodies appear to have in themselves. That is the second thing we previously said could keep the parts of this tiny bond of which we were speaking so strongly attached to one another.

Certainly it could be that God wills each body to remain in the state it is in, and that His will is the force uniting their parts to one another; just as I also know that it is His will that is the motor force which puts bodies in motion. For, since matter cannot move by itself, it seems to me that I must judge that it is a mind, and even the Author of nature, who preserves and puts it in motion by preserving it successively in several places through His simple will, since an infinitely powerful being does not act with instruments, and because effects necessarily follow from His will.

I realize then that it could be that God wills each thing to remain in the state it is in,[a] whether in rest or in motion, and that this will is the natural power bodies have for remaining in the state in which they were once placed. If that is so, it will be necessary, as Descartes did, to measure this power, to conclude what its effects must be, and thus to provide the laws of force and the communication of motion for the collision of different bodies, in proportion to their relative volumes [*par la proportion de la grandeur qui se trouve entre ces corps*] since we have no other way of knowing this general immutable will of God, which causes the different power of bodies to act upon and resist each other, than their different volumes and speeds.

Nevertheless, I have no certain proof that God wills, through a positive volition, that bodies remain at rest; and it seems to suffice that God wills matter to exist, in order not only that it exist, but also that it exist at rest.

Such is not the case with motion, because the idea of matter in motion certainly includes two powers or efficacies to which it is related, to wit, what created it, and further, what activated it. But the idea of matter at rest includes only the idea of the power that created it, without the necessity of another power to put it at rest, since if we simply conceive of matter without considering any power, we will necessarily conceive of it at rest. This is how I conceive things, I must judge of them according to my ideas; and according to my ideas, rest is merely the privation of motion; I mean that the alleged force which makes rest is merely the privation of that which makes motion; for it is sufficient, it seems to me, that God cease to will that a body be moved, in order that it stop moving, and that it be at rest.

Indeed, reason and thousands upon thousands of experiments teach me that if two bodies of equal volume are moved, the one with one rate of speed, and the other with half that rate, then the force of the first will be double that of the second. If the speed of the second is only a quarter, a hundredth, a millionth that of the first, then the second will only have the fourth, the hundredth, the millionth fraction of the force of the first. From this it is easy to conclude that if the speed of the second is infinitely small, or finally null, as when at rest, then the force of the second will be infinitely small, or finally null, if it is at rest. Hence, it seems evident to me that the state of rest has no force for resisting the force of motion.

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[a] Descartes, [*Principles*], art. 31 [*sic*; actually, 37], of part 2, art. 45 ff.

But I remember having heard from several very enlightened persons that it appeared to them that motion was equally the privation of rest as rest the privation of motion. Someone even asserted, for reasons I could not understand, that it was more probable that motion was a privation than rest. I do not distinctly remember the reasons they gave, but they must make me fear that my ideas are false. For even though most men say anything it pleases them to say about things that appear to be of little importance, nevertheless, I believe that the persons of whom I speak took pleasure in relating their conceptions. I must therefore examine my ideas with care once more.

That it is the will of God that moves bodies is a thing that seems indubitable to me, and these gentlemen of whom I speak would agree. Therefore, the force that this ball I see rolling has is the will of God making it roll; what is it necessary for God to do to stop it now? Is it necessary for Him to will with a positive volition for it to be at rest, or is it sufficient that He stop willing it to be active? It is obvious that if God only stops willing this ball to be active, the cessation of this volition of God will cause the cessation of the ball's motion, and consequently it will cause it to be in a state of rest. For the will of God, which was the force moving the ball no longer existing, this force will no longer exist and the ball will therefore no longer be moved. Thus, the cessation of the force of motion causes rest. Therefore, rest has no force that causes it. It is therefore nothing but a pure privation that assumes no positive will in God. Thus, to give bodies some force for remaining at rest would be to admit in God a positive will without reason or necessity.

But let us reverse this argument if possible. Let us suppose for the moment that there is a ball at rest instead of in motion; what must God do to activate it? Does it suffice that He stops willing it to be at rest? If that is so, I have as yet advanced nothing; for motion will as soon be the privation of rest as rest the privation of motion. I therefore assume that God stops willing it to be at rest. But, this assumed, I do not see that the ball is stirred; and, if there are some who conceive that it is moved, I beg them to tell me in which direction, and with what degree of motion it is moved. Certainly, it is impossible that it be moved and that it not have some determination and some degree of motion. And from the single conception that God stops willing it to be at rest it is impossible to conceive that it moves with some particular degree of motion, because <the cases of> motion and rest are not the same. Motions have an infinity of modes; they vary quantitatively; but since rest is nothing, one state of rest cannot differ from another. The same ball that goes twice as fast as another in a given time has twice as much force or motion in that time as the other; but we cannot say that the same ball has twice as much rest in a given time as another.

Therefore, there has to be in God a positive will to put a ball in motion, or to cause a ball to have such a force to be moved, and it is sufficient for it to be at rest that He stops willing it to be moved. Similarly, in order for God to create a world, it is not sufficient that He stop willing it not to exist, but He must positively desire the mode in which it must exist. But to annihilate it, God need not will it not to exist, since God cannot will nothingness through a positive act of will; it suffices only that He stop willing it to exist.

I am not considering motion and rest here according to their relative being; for it is obvious that bodies at rest have relations just as real to those around them as those in motion. I conceive only that bodies in motion have a motor force, and that those at rest have no force for their state of rest, because the relation of moving bodies to those around them is always changing; and therefore there has to be a continuous force producing these continuous changes, for in effect it is these changes which cause everything new that happens in nature. But there need be no force to make nothing happen. When the relation of a body to those around it is always the same, nothing happens; and the preservation of this relation, I mean the action of God's will that preserves this relation, is no different from what preserves the body itself.

If it is true, as I conceive it to be, that rest is merely the privation of motion, then the slightest movement, I mean that of the tiniest activated body, will contain more force and power than the rest of the largest body. Thus, the slightest effort of the tiniest body one can conceive, activated in the void[a] against a very large and vast body, will be capable of moving it slightly, since this large body, being at rest, will have no force to resist that of this tiny body striking against it. Consequently the resistance generated by the parts of hard bodies to hinder their separation necessarily comes from something other than their state of rest.

But what we have just proved by abstract arguments must be demonstrated through sensible experiments to see if our ideas are in agreement with the sensations we receive from objects, for it often happens that such arguments deceive us, or at least that they cannot convince others, especially those prejudiced to the contrary. The authority of Descartes has such a great effect on the reason of some people that this great man must be proved mistaken in every way to disabuse them. What I have just said enters easily into minds that have not filled themselves with the contrary opinion, and I even clearly see that they will be critical of me for stopping too long to prove things that appear incontestable to them. But the Cartesians well deserve the efforts one makes to satisfy them. The others can pass over whatever might annoy them.

Here then are some experiments that sensibly prove that rest has absolutely no power to resist motion, and that consequently show that the will of the Author of nature, which creates the power and force that each body has for continuing in the state it is in, concerns only motion and not rest, since bodies have no power whatsoever in themselves.

Experience teaches that very large vessels, floating in water, can be agitated by very small bodies that knock against them. From this I conclude, in spite of all the evasions of Descartes and the Cartesians, that if these large bodies were in a void they could be agitated still more easily. For the reason there is some slight difficulty in moving a vessel in water is that the water resists the force of the motion communicated to it, which would not happen in a void. And what manifestly shows that water resists the motion communicated to the vessel is that the vessel stops being agitated some time after it has been moved; for that would not happen unless the vessel lost its motion by communicating it to the water, or if the water yielded to it without resisting it, or finally if the water gave it its motion. Thus, since an agitated vessel in water gradually stops moving, it is an indubitable sign that the water resists its motion instead of facilitating it as Descartes claims; and consequently it would be infinitely easier to agitate a large body in a void than in water, since there would be no resistance on the part of the surrounding bodies. It is therefore obvious that rest has no force for resisting motion, and that the slightest motion contains more power and force than the greatest body at rest; and that thus we should not compare the force of motion and of rest according to the proportion we find between the size of bodies in motion and those at rest, as did Descartes.

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[a] By a body in a void, I mean a body so separated from others, solid or liquid, that there is nothing that either helps or hinders the communication of motion.

True, there is some reason to believe that a vessel is agitated from the moment it is first in the water because of the continual change occurring in the particles of the water surrounding it, although it appears to us not to change place. And this is what makes Descartes and some others believe that the one pushing it is not the only force making it advance in the water, but that, on the contrary, it has already received a good deal of motion from the tiny particles of the liquid body that surround it and push upon it equally from all sides, and that this motion is only determined by a new motion of the one that pushes it, so that what agitates a body in water could not do so in the void. It is thus that Descartes and those of his opinion defend the rules of motion he gave us.

Let us suppose, for example, that there is a piece of wood, a square foot in size, in a liquid body, and that all the tiny parts of the liquid body act and are moved against the wood; and that because they push it equally in all directions, as much toward A as toward B, it cannot advance in any direction at all. If, therefore, I push another piece of wood from a half-foot away against the first piece in direction A, I see that it advances. And from this I conclude that it could be moved in the void with less force than that with which this piece of wood pushes it, for the reasons I have just stated. But those of whom I speak deny this, and they reply that the reason the large piece of wood advances from the instant it is pushed by the small one is that the small one, which could not move it if it were by itself, being joined with the agitated particles of the liquid body, determines them to push it and to communicate a part of their motion to it. But it is obvious that, according to this reply, the piece of wood, once agitated, should not have diminished its motion, but that on the contrary it should have continuously augmented it. For according to this reply, the piece of wood is pushed by the water more in direction A than in direction B, and therefore it must always advance. And because this impulsion is continuous, its motion must always increase. But, as I have already said, water, far from facilitating its motion, constantly resists it and, since its resistance always diminishes this motion, finally renders it completely imperceptible.

It is now necessary to prove that the piece of wood, which is equally pushed by the tiny particles of the water surrounding it, has no motion or force whatsoever capable of moving it, even though it continually changes its immediate place, or the surface of the water surrounding it is never the same at different times. For if it is the case that a body equally pushed in all directions like this piece of wood has no motion, it will be indubitable that it is only the external force striking against it which gives it motion, since while this external force pushes it, the water resists it and even gradually dissipates the motion communicated to it, for it gradually stops moving.

Now this much appears obvious, for a body equally pushed from all directions can be compressed; but certainly it cannot be transported, since the addition or subtraction of forces has no effect.

Those to whom I speak maintain that there is never more motion at one time than at another in nature, and that bodies at rest are moved only by collision with some agitated bodies that transmit their motion to them. From this I conclude that a body I assume to be created perfectly at rest in water will never receive a single degree of motion nor a single degree of force to move from the particles of water that surround it and that continually strike against it, provided that they push it equally in all directions, because all these particles that strike against it equally from all sides rebound with all their motion and communicate none of it to the body. Consequently, this body must always be considered at rest and without any motor force, although the surface of the body changes continually.

Now, my proof that these particles rebound this way with all their motion is, besides the fact that the thing cannot be conceived otherwise, that the water touching this body would have to be cooled a great deal or even frozen, and become about as hard as wood is on its surface, since the motion of the particles of water must be equally distributed in the tiny parts of the bodies they surround.

But to compromise with those who defend Descartes's view, I am willing to grant that one should not consider a boat in the water as being at rest. I also grant that all particles of the water surrounding it are in harmony with the new motion the boat communicates to the water, although it is only too obvious, from the lessening of the boat's motion, that they resist it more in the direction it is moving than in the direction from which it was pushed. That nevertheless assumed, I say that according to Descartes, of all the particles of water in the river, only those that touch the boat immediately on the side from which it was pushed can aid in its motion. For, according to this philosopher, [a] *water being fluid, all the particles of which it is composed do not act together against the body we want to move. It is only those that, in touching it, press jointly upon it*. Now, those that jointly press against the boat, together with the boatman, are a hundred times smaller than the whole boat. It is therefore obvious, by the explanation[b] Descartes gives in this article on the difficulty we have in breaking a nail between our hands, that a tiny body is capable of activating one much larger than itself. For after all, our hands are not as fluid as water, and when we want to break a nail, there are more parts joined together that act jointly in our hands than there are in the water pushing a boat.

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[a] *Principles*, pt. 2, art. 63.

[b] Ibid.

But here is a more obvious experiment. Take a very solid plank or some other extremely hard surface. Drive a nail halfway into it and incline the plane a bit. I say that, if an iron bar a hundred times thicker than the nail is put on the plane, one or two inches above it, and is allowed to slide, the nail will not break.[a] And yet it must be noted that according to Descartes[b] all the particles of the bar jointly push and act against this nail, for the bar is hard and solid. If therefore there is *no cement other than rest to unite the parts* that compose the nail, the iron bar being a hundred times thicker than the nail, it must, according to Descartes's fifth rule and according to reason, transmit some small amount of its motion to the part of the nail it would strike against, that is to say, [it should] break it and pass beyond, even though this bar slides with a very slow motion. Thus, it is necessary to look for a cause other than the rest of the parts for making bodies hard, or capable of resisting the effort made to break them, since rest has no force to resist motion, and I believe these experiments suffice to show that the abstract proofs we provided are not false.

It is therefore necessary to examine the third thing we previously said might be the cause of the tight union found between the parts of hard bodies, namely, an invisible matter that surrounds them and that, being very agitated, pushes the interior and exterior parts of these bodies with a great deal of violence, and compresses them in such a way that to separate them requires more strength than this extremely agitated invisible matter possesses.

It seems I can conclude that the union of the parts composing hard bodies depends on the subtle matter surrounding and compressing them, since the two other things that could conceivably be the causes of this union are not truly the causes, as we have just seen. For, since I find resistance in breaking off a piece of iron, and since this resistance comes neither from the iron nor from the will of God, as I believe I have proved, it must necessarily come from some invisible matter, which can be none other than the matter that immediately surrounds and compresses it. I shall now explain and prove this opinion.[c]

Let someone take a globe of some metal, hollow inside and cut into two hemispheres, and let him join these two hemispheres by attaching a small strip of wax where they meet, and then, draw the air from them. Experience shows that these two hemispheres are joined to each other in such a way that several horses, harnessed to them with buckles, some on one side and some on the other, cannot separate them, assuming the hemispheres to be large in proportion to the number of horses. Nevertheless, if the air is let back in, a single person can separate them with no trouble whatsoever. It is easy to conclude from this experiment that what united these two hemispheres so strongly to each other was the fact that being pressured on their convex exterior surface by the air surrounding them, they were

[a] Art. 63.

[b] Art. 50.

[c] See the *Experiments at Magdeberg* of Otto de Guericke, bk. 3.

not pressured at the same time on their concave interior surface. So that the actions of the horses pulling the two hemispheres from two directions could not overcome the effort of an infinity of particles of air that resisted them by pressing the two hemispheres. But the slightest effort is capable of separating them when the air, being reintroduced into the copper sphere, pressures the concave interior surfaces as much as the air from outside pressures the convex exterior surfaces.

If, on the contrary, we take the bladder of a carp and put it in a vessel from which the air is drawn, then this bladder, being full of air, will burst and break because then there is no air outside the bladder to resist that inside. It is also because of this that two planes of glass or marble, having been rubbed against each other, are joined so that we feel resistance when we try to separate them, because these two parts of marble are pressed and compressed by the outside air that surrounds them, and are not so strongly pushed by that on the inside. I could supply an infinity of other experiments to prove that the heavy air that presses on the bodies it surrounds strongly unites their parts, but what I said suffices to explain my thinking clearly on the present question.

I say, then, that the reason for the very strong union of the parts of hard bodies, and of these tiny bonds of which I previously spoke, is that there are other tiny bodies outside, infinitely more agitated than the gross air we breathe, that push and compress them, and that the reason we have trouble separating them is not their state of rest but the agitation of these tiny bodies that surround and compress them.[a] Consequently, the thing that resists motion is not rest, which is nothing but its privation and has no force in itself, but some contrary motion that must be overcome.

This simple exposition of my opinion might seem reasonable; nevertheless, I can well foresee that several people will have a great deal of difficulty accepting it. Hard bodies make such a great impression on our senses when they strike us or when we make a strong effort to break them that we are led to believe their parts are united much more tightly than they really are. And, on the contrary, the tiny bodies that I said surround them, to which I attributed the strength to cause this union, seem too weak to produce such a noticeable effect because they make no impression on our senses.

But, to destroy this prejudice, which is based only on the impressions of our senses and on the difficulty we have in imagining bodies any tinier and more agitated than those we see every day, it is necessary to notice that the hardness of bodies is not measured in relation to our hands or to the efforts we are capable of making, which are different at various times. For in the final analysis, if the greatest strength of men were not almost nothing in comparison with that of subtle matter, we would be very wrong to believe that diamonds and the hardest rocks cannot have their hardness caused by the compression of the tiny, very agitated bodies that surround them. Now, we will clearly recognize that the strength of men is very insignificant if we consider that their power to move their bodies in so many ways comes only from a very minute fermentation of their blood, which agitates its tiny parts somewhat, thus producing animal spirits. For it is the agitation of these spirits that constitutes the strength of our bodies and gives us the power to make these efforts we unreasonably regard as something very great and powerful.

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[a] See the sixteenth Elucidation, toward the end, where I calculate the centrifugal force of the vortexes of the subtle matter.

But it must be noted carefully that this fermentation of our blood is nothing but a very small communication of the motion of this subtle matter of which we have just spoken; for all fermentations of visible bodies are merely communications of the motion of invisible bodies, since every body receives its agitation from some other one. We must not be surprised therefore if our strength is not as great as that of this same subtle matter from which we receive it. But if our blood were fermented as strongly in our hearts as gunpowder is fermented and agitated when set on fire, i.e., if our blood received a communication of motion from subtle matter as great as the one gunpowder receives, we could do extraordinary things fairly easily, such as breaking iron, turning houses upside down, and so on, provided we assume there was an appropriate proportion between our members and the blood agitated in this way. We should therefore get rid of our prejudice and not imagine, in accordance with the impression of our senses, that the parts of hard bodies are so strongly united to each other just because we have so much trouble breaking them apart.

But if we also consider the effects of fire in mines, on the weight of bodies, and on several other effects of nature that have no cause other than the agitation of these invisible bodies (as Descartes proved in several places), we shall realize clearly that it is not beyond their strength to unite and compress the parts of hard bodies together as powerfully as they do. For in the end, I am not afraid to say that a cannonball, whose motion appears so extraordinary, does not even receive the thousandth part of the motion of the subtle matter surrounding it.

You will not doubt what I am proposing if you consider, first, that gunpowder does not catch fire completely or all at the same instant; and second, that when it catches fire completely and instantaneously, it floats only a very short time in the subtle matter. Now bodies that float for a very short time in others cannot receive very much motion from them, as we can see in boats that are abandoned to currents of water and only receive their motion gradually. In the third and most important place, <this is the case> because each part of the powder can receive only that motion which conforms to the subtle matter; for the water transmits to the boat only the direct motion common to all its parts, and that motion is ordinarily very slight in relation to the others.

I could further prove the magnitude of the motion of subtle matter to those who accept the principles of Descartes by the motion of the earth and the weight of bodies, and I would even thence draw several proofs that would be certain and exact enough, but that is not necessary for my topic. In order to have a sufficient proof for the agitation of subtle matter (which I give as the cause of the hardness of bodies) without having seen the works of Descartes, it suffices, I say, to read with some application what I have already said about it in Book 4, Chapter 2, number 5, or rather what I will say of it in the 16th Elucidation from number 11 to the end.

Therefore, being presently delivered from the prejudices that led us to believe that our efforts are very powerful, and that those of the subtle matter that surrounds and compresses hard bodies are very weak, and being persuaded besides of the violent agitation of this matter in virtue of the things I said about gunpowder, it will not be difficult to see that it is absolutely necessary that this matter must be the cause of the hardness of bodies or of the resistance we feel when we try to break them apart.

Now, as there are always a great many parts of this invisible matter that enter and circulate in the pores <of hard bodies>, they not only make them hard, as we have just explained, but furthermore they are the reason why some spring back and return to their original shape, others remain bent, and <still> others are fluid and liquid;[a] and finally, they are the cause not only of the strength found in the parts of hard bodies for remaining beside each other but also of that found in the parts of fluid bodies for separating from each other; i.e., it is the same force that makes some bodies hard and others fluid; hard, when their parts touch immediately; fluid, when their parts do not touch because the subtle matter slides between them.

Neither shall I pause to resolve a very great number of objections that I foresee might be made against what I have just established; because if those who make these objections have no knowledge of true physics, I will only bore and anger, instead of satisfying, them; but if they are enlightened people and their objections are very strong, I could only respond to them with a great number of figures and lengthly discourse. So that I believe I must entreat those who will find some difficulty in the things I have just said to reread this chapter with more care, and the 16th Elucidation. For I hope that if they read and meditate upon it as is necessary, all their objections will vanish. But in the end, if they find my entreaty troublesome, let them relax, for there is no great danger in being ignorant of the cause of the hardness of bodies.

I do not speak here of *contiguity*, for it is obvious that contiguous things touch each other so slightly that there is always a great deal of subtle matter passing between them, and, in making an effort to continue its motion in a straight line, it hinders their union.

I have explained the *union* found between two slabs of marble that have been polished against each other, and it is easy to see that although subtle matter constantly passes between these two parts, as unified as they are, air cannot pass through; and thus it is the weight of the air that compresses and presses these two pieces of marble upon each other, causing us to have trouble disuniting them unless we slide them along one another.

It is clear from all this that the continuity, contiguity, and union of the two slabs of marble would only be the same thing in the void, because we do not also have separate ideas of them; consequently, to make them differ absolutely and not in relation to the bodies around them is to say what is incomprehensible.

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[a] To understand distinctly what I have just said, it is necessary to read what I have said about the nature and effects of subtle matter in the sixteenth Elucidation, number 14 and following.

Here now are some reflections on Descartes's opinion and on the source of his error. I call his opinion an error because I find no way of defending what he says about the rules of motion and the cause of the hardness of bodies toward the end of the second part of his *Principles* in several places, and because he seems to me to have fairly proved the truth of the opposite opinion. I shall give the rules of motion that experience confirms, and the reasons behind these rules.

This great man, conceiving very distinctly that matter cannot move itself and that the natural motor force of all bodies is none other than the general will of the Author of nature, and that hence the communication of the motion of bodies at their collision can come only from this same will, let himself believe that we could provide the rules of the various communication of motions only through the proportion found between the different sizes of the bodies struck, since it is not possible to penetrate the designs and will of God. And because he judged that each thing had the force to remain in the state it was in, whether in rest or motion (because God, whose will makes this force, always acts in the same way), he concluded that rest had as much force as motion. Thus, he measured the effects of the force of rest (like those of the force of motion) by the size of the body at rest, which made him give the rules of the communication of motion in his *Principles*, and the cause of the hardness of bodies I have tried to refute.

It is fairly difficult not to yield to Descartes's opinion when we adopt his viewpoint and when we do not pay attention. But even if God's positive will and efficacy were necessary for rest as well as motion, it does not follow that what would cause rest would be equal to what would produce motion, God having been able to subordinate one to the other and to will that the first always yield to the second.

I am therefore not surprised that Descartes was of this opinion, for it is difficult to think of everything; but I am only surprised that he did not correct it when, having further advanced his knowledge, he recognized the existence and some effects of the subtle matter that surrounds bodies. I am surprised that, in article 132 of the fourth part, he attributes to this subtle matter the force that certain bodies have to rebound, and that in articles 55 and 43 of the second part and elsewhere he does not attribute to it their hardness or the resistance they give when we try to bend and break them, but only to the <state of> rest of their parts. It appears obvious to me that the cause of the elasticity and stiffness of certain bodies is the same as what gives them the force of resistance when we want to break them apart, for in the end the force we use actually to break steel differs only insensibly from that by which it is bent to the point of almost breaking.

I do not want to supply very many reasons here that can be given for proving these things, nor to respond to certain difficulties that might be fashioned about the issue of hard bodies that are not sensibly elastic and that we nevertheless have trouble bending. For it suffices, in order to make these difficulties vanish, to consider that subtle matter cannot easily make new paths for itself in brittle bodies, such as glass and tempered steel, and that it can do so more easily in bodies composed of branched and malleable parts, as with gold and lead; and finally <to consider> that there is no hard body that does not have some elasticity.

It is fairly difficult to be persuaded that Descartes positively believed that the cause of hardness was different from that of elasticity; what appears more probable is that he did not reflect enough upon this matter. When one has meditated on some subject for a long time and is satisfied about the things one wanted to know, one often thinks of it no more. One believes that the thoughts he has are incontestable truths and that it is useless to investigate further. But there are so many things in man that discourage his concentration, and that lead him into overly hasty assent and render him subject to error, that even though the mind remains apparently satisfied, it is not always well informed of the truth. Descartes was a man like us; we have never seen more soundness, accuracy, scope and penetration of mind than appear in his works, I admit, but he was not infallible. Thus, he apparently remained so strongly convinced of his opinion that he did not reflect that he affirmed in consequence of his principles something contrary to them. He had founded it upon quite specious and quite probable reasons, but nevertheless they were not irresistible. He could have further suspended his judgment, and consequently he should have. It did not suffice to examine a hard body to find out what in that body makes it so; he should also have thought about the invisible bodies that can make it hard, as he did at the end of his *Principles of Philosophy*, when he attributes the cause of elasticity to them. He should have made an exact division that encompassed everything that could have contributed to the hardness of bodies. It was not sufficient to look for its cause in general in the will of God, since His volitions, which cause all motion and rest, can be subordinated—that which causes rest to that which produces the motion of bodies. He should have thought further about the subtle matter that surrounds them. For although the existence of this extremely agitated matter was not yet proved in his *Principles* where he speaks of hardness, neither was it rejected. He should therefore have suspended his judgment and carefully recollected that what he had written about the cause of hardness and the rules of motion should have been reviewed all over again, which I believe he did not do with enough care. Or else he did not give enough consideration to the true explanation of a thing that is very easy to recognize, and that nevertheless is of the ultimate importance in physics. Let me explain.

Descartes knew very well that to support his system, the truth of which he perhaps could not doubt, it was absolutely necessary that large bodies always communicate some of their motion to the small ones they encountered, and that the small ones rebound upon colliding with larger ones, with no similar loss of their own. For without this his first element would not have the excess of motion required over the second, nor the second over the third; and his whole system would be absolutely false, as those who have meditated upon it a little know fairly well. But in assuming that rest has force to resist motion and that a large body at rest cannot be stirred by another smaller than it, even though the smaller strikes it with a furious agitation, it is obvious that large bodies must have much less motion than a like volume of smaller ones (since according to this assumption they can always communicate what motion they have) and that they cannot always receive it from smaller ones. Hence, since this assumption is not contrary to everything Descartes had said from the beginning until the establishment of his rules of motion in his *Principles*, and since it adapted very well to the consequences of these same principles, he believed that the rules of motion he thought he had demonstrated through their cause had again been sufficiently confirmed by their effects.

I essentially agree with Descartes that large bodies communicate their motion much more easily than small ones, and that hence his first element is more agitated than the second, and the second than the third. But the cause of this is clear without recourse to his hypothesis. Small bodies and fluid ones, water, air, and such, can communicate to large bodies only that motion uniform and common to all their parts; the water of a river can communicate to a boat only the movement of descent common to all the tiny particles composing the water, and each of these tiny particles, beyond this common movement, has an infinity of other particular ones. Thus, it is obvious from this explanation that a boat, for example, can never have as much motion as an equal volume of water, since the boat can receive from the water only that direct motion common to all the parts composing it. If twenty particles of a fluid body push some other body from one direction, there are as many that push it from the other; it therefore remains immobile, and all the tiny parts of the fluid body in which it floats spring back without losing any of their motion. Thus, heavy bodies whose parts are united with each other can receive only circular and uniform movement from the vortex of subtle matter that surrounds them.

It seems to me that this suffices to explain why gross bodies are not as agitated as small ones, and that it is not necessary for explaining these things to assume that rest has some force to resist motion. Thus, the certitude of the principles of Descartes's philosophy cannot be used as a proof for defending his rules of motion; and there is room to believe that if Descartes himself had once more examined his *Principles* without prejudice and by thinking of explanations similar to those I have stated, he would not have believed that the effects of nature had confirmed his rules, and would not have fallen into contradiction by attributing the hardness of bodies only to the state of rest of their parts, and their elasticity with regard to the effort of subtle matter.

Moreover, I believe I should warn that what damages Descartes's physics most is this false premise that rest has force; for from this he inferred false rules of motion; from this he concluded that the balls of his second element were hard in and of themselves; from which he drew false explanations of the transmission of light and the variety of colors, of the generation of fire, and gave very imperfect explanations of weight. In a word, this false principle that rest has force has influence almost everywhere in his system which aside from that marks a genius superior to the philosophers who preceded him; I hope everyone will agree with all this when they have read and completely understood the sixteenth Elucidation. I admit nevertheless that I owe to Descartes, or to his manner of doing philosophy, the opinions I oppose to his own, and the boldness to criticize him.

CONCLUSION OF THE LAST THREE BOOKS

I have, it seems to me, sufficiently shown in books four and five that the natural inclinations and passions of men often make them fall into error, because they lead them not so much to investigate things carefully as to judge them with haste.

In the fourth book, I showed that the inclination for the good in general is the cause of the restlessness of the will; that restlessness of the will puts the mind in a state of continual agitation, and that an incessantly agitated mind is utterly incapable of discovering slightly obscure truths; that the love of new and extraordinary things often prejudices us in their favor, and that everything that bears the mark of the infinite is capable of dazzling our imagination and beguiling us. I explained how our inclination toward grandeur, high position, and independence engages us insensibly in false erudition or in the study of all those vain and useless sciences that flatter our secret pride, because they cause us to be admired by common men. I showed that the inclination for pleasures incessantly diverts the mind's vision from the contemplation of abstract truths, which are the simplest and most productive, and that this inclination does not permit the mind to consider anything with sufficient attention and disinterestedness to judge it well; that pleasures, being modes of our souls, necessarily divide the mind's capacity, and that a divided mind cannot fully comprehend anything of any scope. Finally I showed that the relation and natural union we have with all those with whom we live is the occasion of many errors into which we fall, and which we communicate to others, as others communicate to us those errors into which they have fallen.

In the fifth book, in trying to give some idea of our passions, I have, it seems to me, adequately shown that they are established to unite us to all sensible things, and to make us choose among them the disposition we should have for their preservation and our own; that just as our senses unite us to our bodies and distribute (so to speak) our soul into all the parts that compose it, so our emotions make us go outside ourselves to distribute ourselves into everything around us: that finally they ceaselessly represent things to us, not according to what they are in themselves in order to form judgments of truth, but according to the relation they have to us, in order to form judgments useful for the preservation of our being and the being of those with whom we are united either by our will or by nature.

After having tried to discover errors in their causes, and to deliver the mind from the prejudices to which it is subject, I believed that finally it was time to prepare it for the search for truth. Thus, I explained in the sixth book the means that seem to me the most natural for increasing the attention and scope of the mind, by showing the use we can make of our senses, passions, and imaginations to give the mind all the strength and penetration of which it is capable. Next I established certain rules that must necessarily be observed in order to discover any particular truth; I explained them through several examples to render them more intuitive, and I chose those that appeared to me the most useful, or that encompassed the most productive and general truths, in order that they be read with more application and that they be made more sensible or obvious and familiar to the reader.

Perhaps you will recognize through this essay on method the necessity for reasoning only upon clear and evident ideas with which you are inwardly convinced that all nations will agree, and the necessity of never going on to complex things before having sufficiently examined the simple ones on which they depend.

But if you consider that Aristotle and his followers did not observe the rules I explained (of which you must be convinced, as much by my proofs of this as by the knowledge of the opinions of the most zealous defenders of this philosopher), perhaps you will scorn his doctrine, in spite of all the favorable impressions given to us by those who let themselves be dazed by words they do not understand.

But if you take note of Descartes's manner of doing philosophy, you will not be able to doubt its soundness; for I have adequately shown that he argues only upon clear and evident ideas, and that he begins with the simplest things before going on to the more complex ones that depend upon them. Those who will read the works of this learned man will be fully convinced of what I say about him, provided they read them with all the attention necessary for understanding them; and they will feel a secret joy at having been born in a century and a country fortunate enough to deliver us from the trouble of searching in past centuries among the pagans, and in the extremities of the earth among barbarians or foreigners, for a Doctor to instruct us in the truth, or rather for a prompter sufficiently trustworthy to dispose us to being instructed by truth.

Nevertheless, as we should not put ourselves to much trouble to know the opinions of men, even were we convinced on other grounds that they had discovered the truth, I should be quite sorry if the esteem I appear to have here for Descartes prejudiced anyone in his favor, and if anyone was content to read and retain his opinions without concern for being illuminated by the light of truth. This would be to prefer man to God, to consult him in place of God, and to be content with the obscure responses of a philosopher who does not enlighten us, in order to avoid the difficulty of questioning through meditation Him who answers and enlightens us all together.

It is an unworthy thing to become a partisan of any sect, whatever it may be, and to regard its authors as infallible. Descartes too, wanting to make men disciples of the truth rather than obstinate sectarians of his opinions, expressly warned: *that we not place any faith at all in what he wrote, and that we accept from it only what the strength and evidence of reason might constrain us to believe.*[a] He does not want, as some philosophers do, to be believed on his word; he always remembers that he is a man, and that, spreading light only through reflection, he must turn the minds of those who want to be enlightened as he is toward sovereign reason, which alone can render them more perfect through the gift of intelligence.

The principal utility to be drawn from application to study is to make the mind more accurate, enlightened, penetrating, and more fit for discovering all the truths we wish to know. But those who read philosophers to retain their opinions and to recite them to others do not draw near to Him who is the life and nourishment of the soul; their minds are weakened and blinded by the commerce they have with those who can neither enlighten nor fortify them; they are filled with a false erudition whose weight overwhelms them and whose glamour dazzles them; and imagining that they become very wise when they fill their heads with the opinions of ancient philosophers, they do not reflect that they are making themselves disciples of those whom Saint Paul said had "become fools by calling themselves wise": DICENTES "se esse sapientes stulti facti sunt" [Rom. 1:22].

The method I have given can, it seems to me, be quite useful to those who want to make use of their reason or who want to receive from God the replies He gives to all those who know how to question Him properly; for I believe I have said the main things that can fortify and guide the attention of the mind, which is the natural prayer we make to the true master of all men in order to receive some instruction from Him.

But as this natural means of searching after truth is very troublesome, and is ordinarily useful only in resolving questions of little use (the knowledge of which serves more often to flatter our pride than to perfect our minds), I believe that to finish this work usefully, I must say that the shortest and surest method to discover the truth and to unite oneself to God in the most pure and perfect manner possible is to live as a true Christian: it is to follow closely the precepts of the eternal Truth, which united itself with us only to reunite us with it. It is to listen to our faith rather than our reason, and to strive after God, not so much by our natural forces (which since Original Sin are totally languid), as by the aid of faith, through which alone God wills to guide us into this immense light of truth that will dispel all our shadows; for in the end it is much better, like good people, to spend some years in ignorance of certain things and then in one moment to find ourselves enlightened forever, than to acquire by natural means, with much application and difficulty, a very imperfect science that leaves us in darkness for all eternity.

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[a] At the end of his *Principles*.

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Translator's Preface

André's *Vie du R. P. Malebranche (publiée par le P. Ingold*, Paris, 1886; Geneva: Slatkin Reprints, 1970) relates that after the publication of the *Search after Truth* (1674–5) Malebranche followed the example of Descartes and sought objections to his work "which might give him occasion to test its principles by replying to them, to educate himself more thoroughly by meditation on these first truths, or even to recant any errors which might have escaped him'' (p. 35). The fate of ''poor Foucher,'' however, discouraged all but informal objections communicated to Malebranche by certain unnamed friends. According to André the objections generally concerned ''only incidental propositions, which were of no improtance to the system'' (p. 36). However, the *Elucidations* Malebranche published in reply to them contain important material on a variety of important topics, especially Malebranche's theories of ideas and causation. These *Elucidations* were published with the third edition of the *Search after Truth* (1677–8), and with the rest of that work underwent significant and extensive modification with each successive edition.

The translation history of the *Elucidations* is largely that of the main body of the *Search*; the shortcomings of the English translations discussed in the Translators' Preface to *Search after Truth* are to be found here as well. In addition, Elucidations 16 and 17, the two longest, appeared only after the English translations; hence they are here translated into English for the first time. (Taylor did offer a translation of Elucidation 16 with the second edition of his translation in 1700; but it was based on a badly incomplete text of little use.) The text here translated is that of the sixth and last edition of 1712, exactly as established by Geneviève Rodis-Lewis *(OC* III, 1964).

TML

suggestions and comments on the commentary were had from Robert Muehlmann, John Nicholas, and Reinaldo Elugardo. Robert E. Butts provided encouragement at crucial points and Robert G. Turnbull gave me the original idea for this as for so much else. Finally, Madeline Lennon contributed in ways both material and spiritual that I cannot begin to recount. To all I express my sincere thanks.

T.M.L.

September 1975

Preface

Wherein is shown what must be thought of the various judgments ordinarily passed on books opposing prejudice.

When a book first sees the light of day, one knows not whom to consult to learn of its destiny. The stars do not preside over its birth, their influences do not act on it, and the boldest of astrologers would not dare predict anything of the various risks of fortune it must run. Since the truth is not of this world, celestial bodies have no power over it; and since the truth is of an entirely spiritual nature, the various arrangements of matter can contribute nothing to its success or ruin. Furthermore, the judgments of men vary so much with regard to the same things that no more rash a prophecy can be made than that concerning a book's degree of success. Consequently, everyone who risks being an author at the same time risks being interpreted however other men wish. But among authors, those who oppose prejudices should expect to be condemned, for their works are too difficult for most men; and if they escape the passions of their enemies, they owe their salvation only to the truth, which protects them.

It is a common fault of all men to be too quick to judge; for all men are liable to error, and they are so liable only because of this fault. Now all precipitous judgments are always in agreement with prejudices. Thus, authors who oppose prejudices cannot fail to be condemned by all those who consult their long-held opinions as if they were laws according to which they should always decide. For in the final analysis, most readers are at the same time both judges of and plaintiffs against such authors. That they are their judges cannot be contested, and they are plaintiffs because these authors disturb them in the possession of their prejudices over which they have the right of prescription and to which they have been accustomed for many years.

I grant that there is a great deal of fairness, good faith, and common sense in many readers, and that sometimes judges are found reasonable enough not to follow commonly held opinions as the infallible rules of truth. There are some who, withdrawing into themselves, consult the inner truth according to which we must judge all things. But there are very few who do so in all cases, and none with all the attention and fidelity necessary in order always to pronounce true judgments. Thus, even if we supposed that there was nothing to criticize in a work attacking prejudice (which we could hope to do only through excessive vanity), I do not think we could find a single man who would approve every aspect of it, especially if the work opposed his prejudices, because it is naturally impossible that a judge who is constantly offended, irritated, and outraged by a plaintiff should give him complete justice, or that he should willingly take the trouble to concentrate his every effort in order to consider arguments that would initially seem to him like extravagant paradoxes or ridiculous paralogisms.

But although we might find in a work many things that please us, if we happen to encounter certain things that shock us it seems to me that we would hardly fail to point out the bad part while often forgetting to point out the good. Self-love has countless motives for leading us to condemn what displeases us, and in this case reason fully justifies these motives, for we imagine ourselves condemning error and defending the truth when we defend our prejudices and condemn those attacking them. Thus, the fairest judges of books opposing prejudice pass general judgments unfavorable to those who have written them. They will say perhaps that there is something good in a given work, and that the author is right to oppose certain prejudices; but they will not fail to condemn him, and to decide as judges with graveness and authority that he pushes things too far in such and such cases. For when the author opposes prejudices toward which the reader is not favorably disposed, everything the author says seems reasonable enough; but the author always overdoes things when he opposes prejudices to which the reader is too closely tied.

Now since the prejudices of different people are not always the same, if we carefully collected all the different judgments passed on the same things, we would often enough see that according to these judgments there is nothing good and at the same time nothing bad in these kinds of works. There would be nothing good, because every prejudice is espoused by somebody; and there would also be nothing bad, because every prejudice is condemned by somebody. Thus, these judgments are so equitable that if one wanted to use them to improve his book, he would either have to wipe out the whole thing lest anything that was condemned should remain, or not touch it at all lest anything that was approved should be altered. As a result, the poor author, who does not want to offend anyone, is perplexed by all these different judgments pronounced on all sides both for and against him. If he decides to remain firm and appear obstinate in his opinions, he must necessarily contradict himself at every turn, and he would have to take as many different forms as there are heads in the populace.

Nonetheless, time does all men justice, and the truth, which initially appears as a chimerical and ridiculous phantom, gradually makes itself felt. We open our eyes, consider it, discover its charms, and are affected by it.

Somebody who condemns an author over an opinion that offends him, by chance meets someone who approves of the same opinion and who, on the other hand, condemns certain opinions that the other receives as beyond question. Each expresses his thoughts and contradicts the other. Each examines both his own and the other's arguments afresh. They dispute, consider, hesitate, and their judgments on what they have not examined no longer come so easily. And if they finally change their opinion and realize that the author is more reasonable than they thought, a secret inclination arises in their heart that sometimes leads them to speak as well of him as they had spoken ill of him. Thus, he who clings steadfast to the truth, although he at first annoys people and seems to be a fool, must not despair of someday seeing the truth he defends triumph over the prejudice of men. For there is this difference between good books and worthless ones, between those that enlighten the mind and those that gratify the senses and imagination: that the latter at first appear pleasant and delightful and then fade with time, whereas the former, on the contrary, have something strange and repellent that is troubling and upsetting, but in time, as they are read and meditated on, they begin to be appreciated, for time usually determines the worth of things. Since books opposing prejudice arrive at the truth by new paths, they require more time than others to bear the fruit their authors expect of them. For since those who write these kinds of books often give us false hope, there are few people who read them, still fewer who approve of them, and practically everyone condemns them whether they have read them or not. And although we might be certain that the most commonly traveled ways do not lead where we wish to go, yet we have an overriding fear of entering upon untrod paths. We do not make use of our sight to direct ourselves, but blindly follow our predecessors. The company offers diversion and consolation. We give no thought to what we are doing, and have no knowledge of where we are going; often we even forget where we intended to go.

Men were created to live in society; but to maintain a society, it is not enough to speak the same language—we must all use the same expressions, we must think like one another, and we must live by opinion as we act through imitation. The good of the body and the establishment of our fortune are easily, pleasantly, and surely attended to when we agree with others' opinions and let ourselves be persuaded by the sensible manifestation of the imagination of those with whom we speak. But we undergo much suffering and risk our fortune to great dangers when we want to listen only to the inner truth and scornfully reject all the prejudices of the senses and all the opinions we have uncritically accepted.

Thus, all writers who oppose prejudice are deceived if they expect renown because of their work. Perhaps, should they succeed, a small number of learned people will speak of their work with praise, but after they themselves have been reduced to ashes; but during their lifetime they should expect to be ignored by most men, and to be scorned, libeled, and persecuted even by people held to be wise and reasonable.

Indeed, there are so many powerful and persuasive reasons for acting as those around us that we are often justified in condemning as frivolous and capricious spirits those who do not do as others, and because acting and thinking are not sufficiently distinguished, it is ordinarily found regrettable that there are people who oppose prejudice. External conformity to our country's customs and opinions is not regarded as sufficient to safeguard the rules of civil society. To examine commonly accepted views is held to be rashness, and to inquire after truth is taken to be a breach of charity, for it is not so much truth as opinion and custom that unifies civil societies.

Aristotle is received in the universities as the rule of truth; he is cited as infallible; to deny what he proposes is philosophical heresy; in short, he is honored as the genius of nature; and for all that, those best versed in his physics cannot account for (and perhaps are not convinced of) anything, and students of philosophy dare not even speak before intelligent people of what they have learned from their teachers. This is perhaps enough to show anyone who reflects on them what ought to be thought of such studies, for a doctrine that must be forgotten in order to become reasonable does not seem very solid. Yet you would be held rash were you to expose the falsity of the arguments authorizing such strange conduct, and if you were skillful enough to disillusion the public, you would still have to deal with those who profit from it.

Is it not evident that we must make use of what we know in order to learn what we do not know, and that to give a Frenchman a grammar in German verse in order to teach him German would be to make fun of the fellow? Yet the Latin verses of Despautère are put in the hands of children to teach them Latin—completely obscure verses for children, who find even the easiest things difficult to understand. Reason and even experience clearly oppose this practice, for children spend a long time only to learn Latin badly. Yet to criticise the practice is considered rash. A Chinese could not help laughing at this practice, but in this part of the world, the wisest and most learned men cannot help approving of it.

If such false and gross prejudices and such unreasonable customs of such great consequence have an infinite number of supporters, how could anyone submit to arguments that oppose prejudice of a purely speculative nature? Very little attention is needed to see that the instruction given children is not the best, yet men do not realize this; opinion and custom prevail over reason and experience. How, then, could anyone be convinced that works which upset a great number of prejudices would not be condemned on many counts, even by those who are regarded as the wisest and most learned of men.

It should be carefully noted that those who are regarded as the cleverest and most enlightened of men are those who have studied most (both good and bad books), who have a better memory, and whose imagination is livelier and of wider scope than others'. Now these sorts of people usually judge things hastily and without examination. They consult their memory and find there the law or prejudice according to which they decide without much reflection. Since they believe themselves cleverer than other people, they give little attention to what they read. Thus, it often happens that women and children recognize the falsity of certain prejudices that have been attacked, because they do not dare judge without first examining, and because they concentrate as much as they can on everything they read. The learned, on the contrary, stick close to their opinions because they do not bother to examine anyone else's opinions if they are completely contrary to what they already think.

As for those in high society, they are concerned with so many things that they cannot easily withdraw into themselves, nor attend sufficiently to distinguish the true from the probable. However, they are not overly attached to certain prejudices; for to remain in society, neither truth nor probability must be valued. Since apparent humility or external moderation and honesty are qualities that are admired by everyone and that are absolutely necessary to maintain society among proud and ambitious men, men in high society find their virtue and merit in asserting nothing, and believing nothing to be indubitable. It always has been and always will be their fashion to consider everything as problematic and to speak cavalierly of even the most sacred truths in order not to appear opinionated about anything. For since those about whom I am speaking attend to nothing but their own success, no disposition is more convenient or seems more reasonable to them than that justified by fashion. Thus, anyone attacking prejudice on one side flatters the pride and indolence of men in society and is well received by them; but those asserting anything as indubitable, and showing the truth of Christian morality and religion, they would regard as obstinate, and as avoiding one precipice only to fall into another.

I think that what I have just said is enough to show what I could answer to the different judgments certain people have delivered against *The Search after Truth*, and I will not perform an exercise that everyone usefully and easily can do. I realize that not everyone will do it, but I would seem to be my own judge were I to give as complete a defense of myself as possible. I cede my right, then, to attentive readers, who are the natural judges of books; and I entreat them to remember the request I have already made to them in the preface of *The Search after Truth* and elsewhere: *to judge my views only according to the clear and distinct replies they will receive from our only Master, after they have attentively consulted Him*. For if they rely on their prejudices as laws decisive of what should be thought of *The Search after Truth*, I grant that it is a worthless book, because it was written expressly to show the falsity and impropriety of these laws.

Foreword

Since the following Elucidations were written to satisfy the desires of some people who wanted me to explain certain very important truths in greater detail than I had done, I feel that I must warn that for a clear understanding of what I am going to say, some knowledge of the principles I laid out in *The Search after Truth* is required. Thus, a careful reading of the entire work for which they are produced should precede any effort devoted to these remarks, and only during a second reading should they be examined as referred to in the margin. Yet this warning I give is not absolutely necessary for all intelligent people, because I have tried to write these Elucidations in such a way that they could be read as if they had no connection to the work for which they are produced. I realize that truth is usually one of the last things in the world given any concern. We do not willingly relate the different parts of a book that go together; rather, we make the best we can of a serial reading. Thus, to accommodate this attitude, I have tried to make these remarks intelligible even to those who have forgotten the passages in *The Search after Truth* to which they are related. Yet I beg those who do not wish to make the effort to carefully examine these Elucidations not to condemn them on the basis of the false and extravagant conclusions that might be drawn from them when they are not understood. I have cause to make this request, not only because I have the right to require of the readers judging me that they not condemn me without understanding me, but also for other reasons I need not set out here.

ELUCIDATION ONE

God produces whatever is real in the mind's impulses and in the determinations of these impulses; nevertheless, He is not the author of sin. God produces whatever is real in sensations of concupiscence, and yet He is not the author of our concupiscence.

Some people hold that I gave up the mind's comparison with matter too soon,[a] and they imagine that it is no more capable than matter of determining the impression God gives it. They would have me explain, if I can, what God does in us and what we ourselves do when we sin, because in their opinion, my explanation would make me either agree that man is capable of giving himself some new modification, or else recognize that God is the true cause of sin.

I answer that faith, reason, and the inner sensation I have of myself force me to abandon my comparison where I do; for I am entirely convinced that I have within myself a principle of my determinations, whereas I have reasons to believe that matter has no such principle. This will be proved later. But here is what God does in us and what we ourselves do when we sin.

First, God unceasingly impels us by an irresistible impression toward the good in general. Second, He represents to us the idea of some particular good, or gives us the sensation of it. Finally, He leads us toward this particular good.

God unceasingly impels us toward the good in general, for (1) God made and preserves us for Himself, (2) He wills that we love everything that is good, (3) He is the prime, or rather, the only, mover. Finally, this is clear from an infinity of things I have said elsewhere, and those to whom I am speaking agree with it.

God presents to us the idea of a particular good or gives us the sensation of it, for only He can enlighten us. The bodies that surround us cannot act on our mind, nor are we our own light or happiness. This I have proved at length in the third book and elsewhere.

Finally, God leads us toward this particular good; for since God leads us toward all that is good, it is a necessary consequence that He lead us toward particular goods when He produces the perception or sensation of them in our soul. This is all that God does in us when we sin.

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[a] Ch. 1.

But since a particular good does not contain all other goods, and since the mind when it considers this good clearly and distinctly cannot believe that it contains them all, God does not lead us either necessarily or invincibly to the love of this good. We feel that we are free to halt this love, that we have an impulse to go farther—in short, that the impression we have for the universal good (or, to speak as others do, our will) is neither constrained nor necessitated to halt at this particular good.

Here then is what the sinner does. He stops, he rests, he does not follow God's impression—he does nothing, for sin is nothing. He knows the great rule he must observe is that he must make as much use of his freedom as he can, and that he must not be content with any good unless he is inwardly convinced that not to will to rest with it would be to contravene order. If he does not discover this rule through the light of his reason, he will at least come to know it through the secret reproaches of his conscience. He ought, then, to follow the impression he receives for the universal good and to think of goods other than the one he is actually enjoying and of which he should only make use. For by thinking about goods other than the one he is enjoying, he can excite in himself new determinations of his love, and make use of his freedom by consenting to these new determinations. Now I shall prove that through the impression God gives him for the good in general he can think about goods other than the one he is enjoying, because it is in precisely this that the difficulty consists.

It is a law of nature that the ideas of objects are presented to the mind as soon as we will to think of them, provided that our capacity for thought is not exhausted by the lively and confused sensations we receive upon occasion of bodily events. Now, we can *will* to think about all things, because the natural impression carrying us toward the good extends to all the goods we can think about—and we can at all times think about all things, because we are joined to Him who contains the ideas of all things as I have proved elsewhere.[a]

If it is true, then, that we can *will* to consider more closely what we already see, as it were, at a distance (since we are joined to Reason, which contains the ideas of all beings), and if it is certain that in virtue of the laws of nature ideas come to us as soon as we will so, then we must conclude:

First, *that we have a principle of our own determinations*. For the actual presence of particular ideas positively determines toward particular goods our impulse toward the good in general and changes our natural love into voluntary love when we rest. Our consent or our inactivity upon perceiving a particular good is nothing real or positive on our part, as I shall explain below.

Second, *that this principle of our determinations is always free with regard to particular goods*. For we are not invincibly lead to love them, since we can examine them in themselves and compare them with the idea we have of the sovereign good or with other particular goods. Thus, the principle of our freedom is that as we are made for God and are joined to Him, we can always think of the true good or of goods other than those of which we are actually thinking—we can always withhold our consent and seriously examine whether the good we are enjoying is or is not the true good.

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[a] Read the chapter of the third book entitled, "That we see all things in God," and the Elucidation on this chapter [10].

I assume, however, that our sensations do not occupy the full capacity of our mind; for in order for us to be free in the sense I am speaking of, not only must God not irresistibly impel us toward particular goods, but we must also be able to make use of our impression toward the good in general to love something other than what we are actually loving. Now since we can love only objects that we can think about, and since we presently cannot think about objects other than those which cause exceedingly lively sensations in us, it is clear that our dependence on the body diminishes our freedom and in many cases even prevents its use altogether. Therefore, since (1) our sensations obliterate our ideas, and since (2) our union with the body (by which we perceive what is related to it) weakens our union with God (by which all things are present to us), the mind must not let itself be divided by confused sensations if it wants to preserve the principle of its determinations as perfectly free.

It is clear from all this that God is in no way the author of sin, and that man in no way gives himself new modifications. God is not the author of sin because He constantly impresses the impulse to continue on whoever sins or stops at some particular good, because He gives the sinner the power of thinking of other things and of proceeding to goods other than the one that is actually the object of his thought and love, because He commands him not to love whatever he can refuse to love without being troubled by remorse, and because He unceasingly reminds him of Himself through the secret reproaches of his reason.

It is true that in a sense God leads the sinner to love the object of his sin; for, as practically all theologians put it, whatever matter, act, or impulse there is in sin comes from God. But only through a false judgment on the part of our mind do creatures appear good, i.e., capable of acting on us and making us happy. Man's sin consists in the fact that he does not relate all particular goods to the sovereign good, or rather in that he does not consider and love the sovereign good in particular goods,[a] and thus does not regulate his love according to the will of God, or according to that necessary and essential order which all men know the more perfectly as they are more closely united with God and less sensitive to the impressions of their senses and passions. For as our senses diffuse our soul throughout our body, and our passions transport it, as it were, into the bodies surrounding us, they lead us away from the light of God that enters and fills us.

Nor does man give himself new modifications that materially change or modify his substance, for the impulse of love, which God unceasingly impresses in us, neither increases nor diminishes, whether we are actually loving or not, i.e., whether or not this natural impulse of love is determined by some particular idea of our mind. This impulse does not cease even with rest in the possession of good (as the motion of bodies ceases with their rest). Apparently God always urges us with a constant force toward Himself; for He urges us toward the good in general to the extent that we are capable of it, and we are at all times equally capable of it because our will, or natural capacity for willing, is always equal to itself. Thus, the impression or natural impulse that leads us toward the good never increases or diminishes.

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[a] See the Elucidation [15] on chapter 3 of the second part of book 6 near the end, where I explain my meaning more distinctly.

I grant that we have no clear idea, nor even an inner sensation, of this constancy of impression or natural impulse toward the good. But this is because we do not know ourselves by *idea*, as I have proved elsewhere,[a] and because we are not aware of our faculties when they are not actually in operation. Whatever is natural, commonplace, and always the same in us, such as the warmth and beating of our heart, goes unnoticed. We are not even aware of our habits, and whether we are worthy of the love or wrath of God.[b] Perhaps there are countless faculties or capacities in us of which we know nothing, for we do not have an inner senation of all that we are, but only of what is actually taking place in us. If we had never felt pain or desired particular goods, the inner sensation we have of ourselves would not enable us to discover whether we were capable of feeling pain or of wishing for such goods. Our memory, and not inner sensation, informs us that we are capable of feeling what we no longer feel. Thus, nothing precludes us from believing that God always urges us toward Himself with a constant force, though in quite different ways, or that He always conserves in our soul an equal capacity for willing, or the same will, as He conserves in all matter taken as a whole an equal quantity of force or motion in the same direction. But even if this were not certain, I do not see how the increase or decrease of our soul's natural impulse could be said to depend on us, because we cannot be the cause of the scope of our own will, and because it does not depend on us to wish to be happy.

It is also certain from what I have said before that God also produces and preserves in us whatever is real and positive in the particular determinations of our soul's impulse, *viz.*, our ideas and sensations. For this is what naturally determines our impulse for the good in general toward particular goods, though not in a way that is invincible, because we have an impulse to carry on farther. Consequently, all that we do when we sin is not to do all that we nonetheless have the power of doing as a result of the natural impression we have toward Him who contains all goods, which impression gives us this power, for we can do nothing except through the power we receive from our union with Him who does all things in us. And it seems evident to me that if we did not desire to be happy, or if we did not have an impression for the good in general, we would be incapable of loving any particular good. Now principally what makes us sin is that since we prefer enjoying things to examining them (on account of the pleasure we feel in enjoying them and the pain we feel in examining them), we cease using the impulse given us for seeking out and examining the good and we stop at the enjoyment of things we ought only to use. But if you attend to this closely, you will see that in it there is nothing real on our part except a lack or discontinuation of examining or searching that, as it were, corrupts God's action in us, but that nevertheless cannot destroy it. What, then, do we do when we do not sin? We do everything that God does in us, for we do not limit to a particular good, or, rather, to a false good, the love that God impresses in us for the true good. And what do we do when we sin? Nothing. We love a false good that God does not make us love through an invincible impression. We give up seeking the true good and frustrate the impulse God impresses in us. All we do is stop and rest. This is certainly done by an act, but by an immanent act that produces nothing material in our substance—by an act that in this case does not even require of the true cause some material effect in us, neither new ideas nor sensations, in short, that is, by an act that does nothing and makes the general cause do nothing insofar as it is general, disregarding His justice, for the soul's inactivity, like the body's, has no force or material efficacy. Now when we love a particular good by itself or contrary to order, we receive from God as great an impression of love as if we did not pause over this good. Furthermore, this particular, natural determination, which is neither necessary nor invincible in relation to our consent, is also given to us by God. Thus, when we sin, we produce in ourselves no new modification at all.

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[a] See the second part of book 3, chapter 7, number 4, and the Elucidation where I return to this matter [11].

[b] "Nemo scit utrum amore, vel odio dignus sit." Eccles. 41 [9:1].

I grant, however, that when we do not sin and when we resist temptation, we can be said to give ourselves a new modification in this sense, that we actually and freely will to think of things other than the false goods that tempt us, and we will not to rest in their enjoyment. But we will it only because we will to be happy only through the impulse toward the good in general that God constantly impresses in us—in short, only if our will is aided by grace, i.e., illumined by a light and urged on by a prevenient delight. For in the final analysis, if willing different things is said to be a matter of giving oneself different modifications, or if our consent, which I view as inactivity or voluntary suspension of seeking and examining, is taken to be a material reality, then I agree that in this sense the mind can modify itself in different ways through the action or desire to be happy that God places in it, and that in this sense it has a real power.[a] But it seems to me that there is no more reality in the consent we give to good than in that we give to evil, that that which is a consequence of a true judgment is right and that that which depends on a false judgment is disordered, and that the morality of our consent is derived solely from objects. The soul's repose in God is just, for He is the true good, the true cause of happiness. The same repose in some created thing is unjust, because no creature is a true cause of happiness. But I do not see that our inactivity, whether ordered or disordered, which makes us either just or criminal, of itself materially changes the substance of our soul.

It even seems to me that it is a contradiction and that therefore God cannot give to his creatures any real power or make them the cause of some material reality. For I believe it certain that conservation is but continued creation, for it is but the same will of God, who continues to will what He has willed, and this is the general view among theologians. A body, for example, exists because God wills that it exist, and He wills it to exist either here or there, for He cannot create it nowhere. And if He creates it here, is it conceivable that a creature should displace it and move it elsewhere unless God at the same time wills to create it elsewhere in order to share His power with His creature as far as it is capable of it? But if this be assumed possible or not to contain a metaphysical contradiction, for only that is impossible for God, by what principle of reason or religion can the dependence of creatures be diminished? But I shall speak elsewhere of the supposed efficacy of secondary causes.[a] I shall now return to the topic.

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[a] See the second volume of my *Réponses à M. Arnauld*, p. 412 and ff.

I say, then, that this action, or rather this impression or natural desire we have for happiness, depends on us in this sense, that it is not invincible with regard to particular goods. For when a particular good is presented to us, we have an inner sensation of our freedom with regard to it, just as we have of pleasure and pain when we feel them. We are even convinced of our freedom by the same reason that convinces us of our existence, for it is the inner sensation we have of our thoughts that informs us of our existence. And if, while we sense our freedom with regard to a particular good, we must doubt that we are free because we have no clear idea of our freedom, then we would also have to doubt our pain and our existence while we are miserable, because we have no clear idea of our soul or of our pain, but only an inner sensation of them.

Inner sensation is different from our external senses. The latter always deceive us in some way when we follow their reports; but our inner sensation never deceives us. Through my external senses I see colors on the surface of bodies, hear sound in the air, feel pain in my hand, and I fall into error if I judge these things on the basis of what my senses report. But through inner sensation I know that I see color, hear a sound, suffer pain; and I do not err in believing that I see when I see, that I hear when I hear, that I suffer when I suffer—provided that I let it go at that. I do not explain these things at greater length because they are clear by themselves. Thus, since we have an inner sensation of our freedom while a particular good is present to our mind, we must not doubt that we are free with regard to this good. Nonetheless, since we do not always have this inner sensation and since we sometimes consult only its confused residue in our memory, we can by thinking about abstract reasons, which prevent us from being aware of ourselves, convince ourselves that it is not possible that man should be free—just as a Stoic who has everything and who philosophizes in comfort might imagine that pain is not an evil because the inner sensation he has of himself does not actually convince him of the contrary. Like Seneca he may prove by reasons which in a sense are quite true that it is even a contradiction that the wise man should be unhappy.

Yet even if the inner sensation we have of ourselves were not enough to convince us that we are free, we could persuade ourselves of our freedom through reason. For, convinced as we are through the light of reason that God acts only for Himself and that He cannot give us an impulse that does not tend toward Himself, the impression toward the good in general might be invincible;

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[a] See the Elucidation [15] on this subject and the seventh *Dialogue on Metaphysics*.

but it is clear that the impression He gives us toward particular goods must necessarily be such that it is up to us to follow it or withhold our consent with regard to it. For if this impression were invincible, we would have no impulse to lead us to God, although He gives us impulse only for Himself; and we would be required to stop at particular goods, although God, order, and reason prohibit us from doing so. As a result, we would sin through no fault of our own, and God would truly be the cause of our disorders, because they would not be free but purely natural.

Thus, even if we were not convinced of our freedom through the inner sensation we have of ourselves, we could discover through reason that man is necessarily created free—given that he is capable of desiring particular goods and that he can desire these goods only through the impression or impulse that God continuously gives him for loving Him, which can also be proved through reason. But the same is not true of the capacity we have for suffering pain. In order to discover that we have this capacity, there is but one means, inner sensation; and yet nobody doubts that man is subject to pain.

When I say that we have an inner sensation of our freedom, I do not maintain that we have inner sensation of a power determining us to will something without any material motive, a power that some people call *pure indifference*. Such a power seems to me to contain a manifest contradiction. You can see this well enough if you have attended to what I have just said, for it is clear that some motive is necessary, that before consenting [*consentir*] we must, as it were, be aware of something [*sentir*]. It is true that we often do not think about the motive that makes us act, but this is because we do not reflect on it, especially in matters of little consequence. Certainly there is always some secret and confused motive in the least actions, and it even leads certain people to suspect, and sometimes to maintain, that they are not free, because upon careful examination of themselves they find hidden and confused motives that make them will. I grant that they have been *acted upon*, as it were, that they have been moved; but they have also acted through the act of their consent, an act that they had the power of not giving at the moment they gave it—a power, I say, of which they had an inner sensation at the moment they used it and which they would not have dared to deny if at that moment they had been questioned. When I say, then, that we have an inner sensation that cannot deceive us about our freedom, I do not mean some *pure indifference* that would grant us a kind of independence of God's control over us or of the material motives that He produces in us, by which He knows and can make us will and voluntarily carry out everything that He wills. I mean, rather, the actual power we have of withholding our consent with regard to the motives that urge us to give our consent when these motives do not, as it were, fill the soul's entire capacity. I admit, however, that this power is not equal in all men, nor even in the same person at different times, as I have explained elsewhere.[a]

I shall not pause to prove our freedom by detailing the horrible consequences of the error of those who deny it. You can see well enough that this error destroys from top to bottom every kind of religion and morality, divine as well as human justice—an irrefutable proof that we are free.

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[a] Discourse 3, *Treatise on Nature and Grace*.

Since we do not know our soul through a clear idea, as I have explained elsewhere,[a] it is in vain that we attempt to discover what in us terminates the action that God impresses in us, or what it is in us that lets itself be overcome by an impulse that is not invincible, and that we can change by our will, or our impression toward everything good, and by our union with Him who contains the ideas of all beings. For in the final analysis we do not have a clear idea of any of our soul's modifications. Only inner sensation tells us that we are and what we are. We must consult this sensation, therefore, in order to convince ourselves that we are free. Its response on this matter is clear enough when we are considering some particular good, for nobody can doubt that he is not invincibly led to eat some fruit or avoid some mild pain. But if instead of listening to our inner sensation we attend to abstract reasoning that distracts us from thinking about ourselves, then perhaps in losing sight of ourselves we shall forget what we are, and in wishing to reconcile God's knowledge with His absolute power over our wills, we shall doubt that we are free and shall fall into an error that upsets all the principles of religion and morality.

The most common and apparently strongest objection that can be made against freedom is the following. Conservation, you will say, is nothing but continued creation on God's part, i.e., the same constantly efficacious will. Thus, when we speak or walk, when we think and will, God makes us such as we are—He creates us speaking, walking, thinking, willing. If a man perceives and tastes an object, God creates him perceiving and tasting this object; and if he consents to the impulse that is excited in him, if he rests with this object, God creates him stopping at and resting with this object. God makes him such as he is at that moment. He creates in him his consent in which he has no greater role than do bodies in the motion that moves them.

I answer that God creates us, speaking, walking, thinking, willing, that He causes in us our perceptions, sensations, impulses, in a word, that He causes in us all that is real or material, as I have explained above. But I deny that God creates us as consenting precisely insofar as we are consenting or resting with a particular good, whether true or apparent. God merely creates us as always being able to stop at such a good. This is clear, because it is clear that it is not God who makes us stop at such a good, since (a) He constantly creates us wishing to be happy, and (b) He constantly urges us toward the good in general, toward all good. He leads us toward such a good according to the laws concerning the union of the body and soul or in some other way—agreed; but it is a contradiction that He should invincibly lead us toward this good insofar as it does not fulfill the natural and invincible desire we have for all good. God creates us, then, not precisely insofar as we are consenting or withholding our consent, but insofar as we are able to give or withhold it. For since God constantly creates us, not *being able* to will, but willing to be happy, and since our mind is limited, a certain amount of time is necessary to determine whether some good is a true or false good, and even whether while pausing over some good represented or felt as a true good or cause of some actual pleasure, this good might not become an evil because while pausing over it possession of some greater good might be lost.

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[a] Chapter 7 of the second part of book 3, and Elucidation [11] below.

It follows from what I have just said, first, that we are materially predetermined toward the good in general, because we necessarily will to be happy and because the desire for happiness is in us independently of us.

Second, that we are also materially predetermined toward particular goods in this sense, that we are urged toward what we know and relish as good. The soul's natural impulse toward particular goods is, in effect, but a natural consequence of its impulse toward the good in general. Thus, all pleasure is by itself efficacious in relation to the will, for it moves and urges it, as it were, toward the object.

Third, that every pleasure or material motive, although efficacious by itself in relation to the will it moves, is not efficacious by itself in relation to the will's consent; for it does not remove the soul's desire to be genuinely happy, or the power to withhold its consent and to examine whether such a pleasure accords with the sovereign happiness it invincibly desires.

Fourth, that therefore the grace of Jesus Christ,[a] prevenient delight, although efficacious by itself in relation to the will that it excites and moves, is not efficacious by itself in relation to the consent of the will, which can consent to it, and which resists it only too often—either because as the soul withholds its consent too long spiritual delight does not continue, or because concupiscence constantly provides motives that are contrary to it.

Fifth, that it is nonetheless God who through His grace operates in us our volition and conduct, for it is He who begins our conversion. His grace must dispose our will, for we must be aware [*sentir*] before consenting [*consentir*]. Thus, God does not cooperate as the Pelagians would have it; rather, He operates and it is we who cooperate—for He who begins, and without whom nothing is possible, is He who, strictly speaking, operates. God's grace travels, as it were, both before the will and with the will, not by producing the act of consent, but by letting the active faculty of the soul, the will that it moves, produce it. And God's omnipotence seems all the greater in that He makes use of free causes as successfully as He does of necessary ones, and His goodness all the greater in that in making us act in complete freedom, He (through the help of His entirely gratuitous grace) makes us worthy of the rewards He has promised and wills to bestow with justice upon those who cooperate with Him. "His ergo modis," says Saint Augustine, "quando Deus agit cum anima rationali, ut ei credat, neque enim credere potest quodlibet libero arbitrio, si nulla sit suasio vel vocatio cui credat; perfecto & ipsum velle credere Deus operatur in homine, & in omnibus misericordia ejus praevenit nos: consentire autem vocationi Dei, vel ab ea dessentire, sicut dixi, propriae voluntatis est" (*De spiritu & littera*, ch. 34).

Here is an objection usually raised against what I said above, that God produces everything of a real nature in us when we sin; and although it is quite weak, it nonetheless troubles a great many people. The hatred of God, they say, is an action in which there is nothing good. Therefore, it belongs entirely to the sinner; God has no part in it. Consequently, man acts and gives himself new modifications that in no way come from God. This is true in a sense; but I answer that sinners hate God only because they freely and falsely judge that He is evil, since the good cannot be hated as such. Thus, by the same impulse of love God impresses in them for the good, they hate God. Now they judge that God is not good because they make improper use of their freedom. Since they are not convinced by invincible evidence that God is not good, they should not believe Him evil, nor consequently, hate Him.

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[a] This is explained at greater length in the first of four letters in the second volume of my replies to Arnauld.

Three things must be distinguished in hatred: the soul's sensation, the will's impulse, and the consent to this impulse. The sensation cannot be evil, for it is a modification of the soul that is neither morally good nor bad. Nor is the impulse evil, since it is not different from the impulse of love. For, since the evil that is external to us is but the privation of good, it is clear that to flee evil is to flee the privation of good, i.e., to tend toward the good. Thus, everything of a real or positive nature even in the hatred of God contains nothing evil. Only in the consent of a soul disordered by false judgment is the formal evil of sin to be found. And the sinner can hate God only by making abominable use of the impulse He constantly gives him to lead him to His love; and he can so misuse it only because he confusedly perceives and falsely judges that God is not good, and ceases to examine the false reasons that lead him to believe that creatures rather than the Creator are the causes of his happiness. In short, only in moral evil, or the disorder of the sinner's love, does God have no part.

God produces whatever is of a real nature in sensations of concupiscence, and yet He is not the author of our concupiscence.[a]

Since the difficulties raised concerning concupiscence are closely related to those I have just explained, this is an appropriate place to show that God is not the author of concupiscence, even though He does everything and produces even sensible pleasures in us.

For the reasons I have given in the fifth chapter of the first book of the *Search after Truth*, and elsewhere, you must agree, it seems to me, that according to the laws concerning the union of the body and soul, man even before his sin was led by prevenient pleasures to the use of sensible goods, and that each time certain traces were formed in the principal part of his brain, certain thoughts were generated in his mind. Now, these laws were quite appropriate for the reasons related in this same chapter. All this is taken for granted. Since before sin all things were perfectly ordered, man necessarily had the power over his body to prevent, when he so wished, the formation of these traces, for order requires that the mind dominate the body. Now, this power of man's mind over his body consisted precisely in the fact that according to his different interests and desires, he halted the communication of motion produced in his body by surrounding bodies, over which his will did not have the same immediate and direct power as over his own. It seems to me inconceivable that he could have prevented the formation of traces in his brain in any other way. Thus, the will of God, or the general law of nature, which is the true cause of the communication of motion, on certain occasions depended on the will of Adam. For God held him in such esteem that unless he consented to it, He produced no new motion in his body, or at least in its principal part, to which the soul is immediately joined.

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[a] This Elucidation relates to chapter 5 of book 1 of the *The Search after Truth*.

Such was the institution of nature before sin; the immutable order of Justice, and hence He whose will always conforms to this order, willed it to be so.[a] Now, since this will always remains the same, the first man's sin upset the order of nature, because after his sin the immutable order no longer requires that he absolutely dominate anything. It is not right that the sinner should be able to suspend the communication of motion, that God's will should accord itself with his, or that exceptions to the laws concerning the union of the body and soul should be made in his favor. As a result, man is subject to concupiscence, his mind depends on his body, he feels unintended pleasures and involuntary, rebellious impulses as a result of the most just law which joins the two parts composing him.

Thus, the *formal* aspect of concupiscence has nothing more real about it than the *formal* aspect of sin—it is nothing in man but loss of the power he had to suspend the communication of motion on certain occasions. No positive will in God to produce it need be admitted. Man's loss here is not a natural consequence of God's will, which always conforms to order and remains the same—it is a consequence of the sin which has left man unworthy of a privilege due only to his justice and innocence, but only sin, which has changed the order of dependence between body and soul.

God does produce, however, whatever is of a real or positive nature in the sensations and impulses of concupiscence,[b] for God produces all that is real; but this is in no way evil. It is through the general law of nature, through the will of God, that sensible objects produce certain kinds of motion in man's body, and that this motion excites certain sensations in the soul that help preserve the body or propagate the species. Who, then, would dare say that these things in themselves are not good?

I know it is said that sin is the cause of certain pleasures. It is said, but is it conceivable? Is it thinkable that sin, which is nothing, should actually produce something? Is it conceivable that nothingness should be a real cause? Yet this very thing is claimed. But perhaps it is a matter of not bothering to think seriously about what is being said; or else of not wanting to accept an explanation contrary to the hearsay of people who perhaps speak with more gravity and self-assurance than enlightenment.

Sin is the cause of concupiscence, but it is not the cause of pleasure, just as free will is the cause of sin without being the cause of the soul's natural impulse.

[a] In the objection of article 7 of the Elucidation [8] of chapter 7, book 2, I explain what I say here generally about man's loss of the power he had over his body.

[b] St. Augustine against the two Epistles of the Pelagians, bk. 1, ch. 15, etc.

The soul's pleasure, as well as its impulse or its love, is materially good; and there is no good that God fails to do. The rebellion of the body and the malignity of pleasure come from sin, just as the soul's attachment to a particular good, or its rest, comes from the sinner; but these are only privations and nonbeings of which the creature is capable.

All pleasure is good and to some extent even makes those who enjoy it happy, at least while they are enjoying it. But pleasure may be said to be evil because instead of raising the mind to Him who causes it, through our mind's error and our heart's corruption it lowers the mind to the sensible objects that seem to cause it. It is evil because, given that we are sinners and consequently deserving more to be punished than to be rewarded, it is unjust for us to require God as a result of His decrees to reward us with pleasant sensations. In short (for I do not want to repeat here what I have said elsewhere), it is evil because God now forbids it since it turns the mind away from Him, the mind that He created and preserves only for Himself. For what God had formerly ordained to preserve man in his innocence now fixes the sinner in his sin, and the sensations of pleasure He had wisely established as the quickest means of informing man (without distracting his reason from its true good) whether he should unite with the bodies surrounding him now exhaust his mind's capacity and attach him to objects incapable of acting on him and infinitely below him (because he considers these objects as the true causes of the happiness he enjoys upon their occasion, and because it is not up to him to arrest the motion they excite in him).

ELUCIDATION TWO

On the first chapter of the first book, where I say: That the will can variously determine the impression it has for the good only by ordering the understanding to represent some particular object to it.

It should not be imagined that the will *orders* the understanding in any other way than by its desires and impulses—for the will has no other action. Nor should the understanding be taken to obey the will by producing in itself the ideas of things the soul desires—for the understanding does not act. All it does is receive illumination or the ideas of things through the necessary union it has with Him who contains all beings in intelligible fashion, as has been explained in the third book.

Here then, is the whole mystery. Man participates in, and is joined to, Sovereign Reason,[a] and the truth is revealed to him to the extent that he attends to and beseeches it. Now, the soul's desire is a natural prayer that is always fulfilled, for it is a natural law that ideas are all the more present to the mind as the will more fervently desires them. Thus, provided that our capacity for thought or our understanding is not taken up by the confused sensations we receive upon occasion of some bodily event, whenever we desire to think about some object the idea of that object is present to us; and as experience teaches us, this idea is clearer and more immediate as our desire is stronger or our attention more vivid and as the confused sensations we receive through the body are weaker and less perceptible, as I have already pointed out in the preceding remark.

Thus, when I said that the will orders the understanding to present some particular object to it, I meant only that the soul that wills to consider carefully the object draws near it through its attention or desire, because this desire, as a result of the efficacious decrees of God (which are the inviolable laws of nature), is the cause of the presence and of the clarity of the idea representing the object. I could not have spoken in any other way, nor could I have explained myself as I am now doing, for I had not yet proved that God alone is the author of our knowledge or that our particular volitions are the occasional causes of it. I spoke according to common opinion, and I was often forced to do so because not everything can be said at the same time. Some fairness on the part of the reader is required, and he must extend his credit for a while if he wishes to be satisfied, for only geometers can always pay in cash.

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[a] See the Elucidation [10] of ch. 6, pt. 2, bk. 3.

It should not be imagined that the soul's different faculties, of which the understanding and the will are the chief ones, are entities different from the soul itself. In the idea we have of matter, or extension in length, depth, and breadth, we evidently see that the capacities it has for receiving motion and different figures are not distinct from its essence; and if we had as clear an idea of the soul as we have of the body, I am convinced that we would also see that its understanding and will are not different from the soul itself. We would see that the soul is essentially a substance that thinks or perceives everything that affects it, that it is an intelligence that nonetheless is actually made intelligent only through the efficacy of divine ideas, which alone can act on it, affect it, modify it, enlighten it, as I have explained elsewhere. It is really the soul, then, that perceives, and not the understanding conceived as something different from the soul. The same is true of the will; this faculty is but the soul itself insofar as it loves its perfection and happiness, insofar as it wills to be happy, or insofar as through the impulse God constantly impresses in it for the good in general it is made capable of loving everything that appears to it to be good. Freedom too is but the soul insofar as it is not invincibly led toward particular goods, or goods that do not actually satisfy its natural desire, for the soul's power of suspending its consent with regard to false goods is drawn from its natural and invincible impulse for happiness, for true and well-founded happiness. We generally say that the will is active and that it is free instead of that the soul is active and free. But a critic would lack either intelligence or fairness to accuse an author of contradicting himself by pointing to different passages that appear to be contradictory.

ELUCIDATION THREE

On the third chapter, where I say: That we should not be surprised if we have no evidence for the mysteries of the faith, since we do not even have any ideas of them.

When I say that we have no idea of the mysteries of the faith, it is clear from the preceding and from the following that I am speaking about clear ideas that produce enlightenment and evidence and by which we have an *understanding* of the object so to speak. I agree that a peasant would be incapable of believing, for example, that the son of God was made man or that there are three persons in God[a] unless he had some idea of the Word's union with our humanity or some notion of a person. But if these ideas were clear, one could, by attending to them, perfectly understand these mysteries and explain them to others, and they would no longer be ineffable mysteries. The word *person*, according to Saint Augustine, was applied to the Father, Son, and Holy Spirit, not so much to explain clearly what they are, as not to remain silent on a mystery about which we are obliged to speak.

I say here that we have no ideas of our mysteries, as I have said elsewhere that we have no idea of our soul, because the idea we have of our soul is no clearer than the idea we have of our mysteries. Thus, the word *idea* is equivocal. Sometimes I take it as anything that represents some object to the mind, whether clearly or confusedly. More generally I take it for anything that is the immediate object of the mind. But I also take it in the most precise and restricted sense, that is, as anything that represents things to the mind in a way so clear that we can discover by simple perception whether such and such modifications belong to them. For this reason I have sometimes said that we have an idea of the soul and have sometimes denied it.[b] It is difficult and sometimes bothersome and unpleasant to preserve a too rigorous exactness of expression or to define terms when the subsequent discourse determines the sense in which they are taken.

[a] "Ne omnino taceremus interrogati, quid tres, cum tres esse fateamur." *De Trinitate* bk. 7. ch. 4 [6]. And elsewhere. "Cum quaeritur; quid tres. Magna prorsus inopia humanum laborat eloquium. Dictum est tamen tres personae, non ut illud diceretur, sed ne taceretur." Ibid. Bk. 5. ch. 9.

[b] Chapter 7 of the second part of book 3.

When an author contradicts himself only in the mind of those who seek to criticize him and hope that he contradicts himself, he should not be greatly concerned; and if he were willing to satisfy with annoying explanations everything malice or ignorance could set up against him, not only would he write a nasty book, but worse, its readers would be shocked by his replies to imaginary objections that are contrary to a certain fairness in which everybody prides himself. For men do not wish to be suspected of malice or ignorance, and it is ordinarily permissible to answer weak or malicious objections only when someone of repute has lodged them and when the readers are thus protected from the reproach that such responses seem to make against those who require them.

ELUCIDATION FOUR

On the following passage from the fifth chapter: This being so, Adam cannot be said to have been brought to love of God and to his duty by prevenient pleasures, because the knowledge he had of his good and the joy he continually felt as a necessary result of the perception of his happiness in being united to God could have sufficed to attract him to his duty and make him act more meritoriously than if he had been determined, as it were, by prevenient pleasure.

For a distinct understanding of all this, we must realize that only illumination and pleasure determine us to act. For if we begin to love an object, we do so either because we know through reason that it is good or because we experience through sensation that it is pleasant. Now there is quite a difference between illumination and pleasure. Illumination enlightens our mind and makes us aware of the good without actually or efficaciously leading us to love it. Pleasure, on the contrary, both moves us and efficaciously determines us to love the object seeming to cause it. Illumination does not lead us by itself; it merely permits us to lead ourselves, freely and by ourselves, to the good it presents to us when we already love it; illumination leaves us entirely to ourselves. Pleasure, on the contrary, precedes our reason; it prevents us from consulting it and makes us love by instinct; it does not leave us entirely to ourselves and it weakens our freedom.

Thus, since before sin Adam was destined in time to merit eternal happiness, and since for this reason his freedom was complete and hs illumination sufficient to keep him closely joined to God (whom he already loved through the natural impulse of his love), he did not have to be inclined to his duty through prevenient pleasures, which would have diminished his merit by diminishing his freedom. In a sense, Adam would have had reason to complain to God had he been prevented from meriting his reward as he was supposed to merit it, i.e., through perfectly free actions.[a] It would have been a kind of insult to his freedom for God to give him the kind of grace we now need because of the prevenient pleasures of concupiscence. Since Adam had everything necessary to his perseverence, to dispose him through the instinct of pleasure would have been to distrust his virtue

[a] "Fortissimo quippe dimisit atque permisit facere quod vellet." Aug. *De corrept. & grat.* ch. 12.

and almost accuse him of infidelity. To remove from him all feelings of the needs he might have and the weaknesses he might be susceptible to would have been to give him some reason for glorying in himself, for I acknowledge he then had neither needs nor weaknesses. Finally[a] and most importantly by far, it would have been to make us indifferent to the Incarnation of Jesus Christ, which is certainly the first and greatest intention of Him[b] who let men become covered with sin in order to have mercy on them in Jesus Christ so that he who glorifies himself does so only in the Lord.

It seems to me certain, then, that Adam felt no prevenient pleasures in his duty. But it seems to me that it is not entirely certain that he felt joy, though I here assume that he did since I think it very probable. Let me explain this.

One way in which prevenient pleasure differs from the pleasure of joy is that the former precedes reason whereas the latter follows it. For joy naturally results from the knowledge we have of our happiness or perfections, because we cannot consider ourselves as happy or perfect without immediately experiencing joy over it. Since we can sense that we are happy through pleasure, or know it through reason, there are two kinds of joy. But here I am speaking of the joy that is purely sensible. I am speaking here of the joy that Adam was able to feel *as a necessary consequence of the perception of his happiness in being united to God*. And there are some reasons to doubt he actually had this joy.

This main reason is that this joy would have perhaps so filled his mind that it would have deprived him of his freedom, and his union with God would have been invincible. For it might be thought that since this joy had to be in proportion to the happiness Adam possessed, it would have been excessive.

But to this I reply, first, that purely intellectual joy leaves the mind entirely free and occupies very little of its capacity for thought. In this it differs from sensible joy, which ordinarily upsets reason and diminishes freedom.

I reply, second, that Adam's happiness at the first instant of his creation did not consist in a full and complete possession of the sovereign good. He was still capable of losing it and becoming unhappy. His happiness consisted mainly in that he did not suffer pain and that he was with Him who was to make him perfectly happy, and he persevered in his innocence. Thus, his joy was not excessive; it was, or should have been, mixed with a kind of fear, for he should have distrusted himself.

Finally, I reply that joy does not always apply the mind to the real cause of its production. Since we experience joy upon perceiving our perfections, we naturally believe that our perception of them causes it; for when something always follows another, it is naturally considered as one of its effects. Thus, we regard ourselves as the author of our present happiness, we are secretly complacent about our perfections, we love ourselves and glory in ourselves, and our thought is not always directed to him whose operation on us is imperceptible.

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[a] See the second dialogue of the *Conversations chrétiennes*, Paris edition, where I give an account of permission for sin.

[b] Rom. 2:32; Gal. 3:22.

It is true that Adam knew more distinctly than the greatest philosopher ever that only God could act on him and cause in him the sensation of joy he felt at the perception of his goodness and perfections. He knew all this very clearly through the light of his reason when he attended to it, but he did not sense it. On the contrary, he sensed that this joy was a consequence of the perception of his perfections, and he sensed this always and without any effort on his part. Thus, this sensation was able to lead him to consider his own perfections and to be pleased with himself if he forgot or in some way lost sight of Him whose operations cannot be perceived. As a result, far from making him incapable of sin (as the objection to which I am responding would have it), his joy might even have been the occasion of his pride and downfall. This is why I say in this chapter that Adam should have been careful *not to let his mind's capacity be filled by a presumptuous joy excited in his soul by the perception of his natural perfections*.

ELUCIDATION FIVE

On the fifth chapter, where I say: That prevenient delight is the grace of Jesus Christ.

Although I say in this chapter that prevenient delight is the grace that Jesus Christ has particularly merited for us, and although I elsewhere absolutely call it the grace of Jesus Christ, this is not to say that there is any other actual grace besides this one, or that there is any grace that Jesus Christ has not merited for us. But I call it the grace of Jesus Christ in order to distinguish it from the grace God gave to the first man at his creation, which is ordinarily called the grace of the Creator. For the grace by which Adam was able to persevere in his innocence was primarily a grace of light, as I have just explained in the preceding remark; since Adam had no concupiscence, he had no need of *prevenient* pleasures to combat it.

But the grace that is now necessary to sustain us in our duty and to produce and maintain charity in us is *prevenient* delight. For since pleasure produces and maintains love of the things causing it or seeming to cause it, the prevenient pleasures we receive upon occasion of the presence of bodies produce and maintain cupidity in us. Consequently, since cupidity is entirely contrary to charity, unless God produces and maintains charity in us through prevenient delights, the prevenient pleasures of concupiscence would clearly weaken it to the extent that they strengthen cupidity.

What I say here supposes that God permits our concupiscence to act on us and that He does not diminish it by inspiring horror in us for the sensible objects that as a result of sin must now tempt us; for the horror of injustice is just as real a grace as the delight of justice. But the supposition that God diminishes concupiscence instead of increasing the delight of grace will have the same result. Clearly, a balance scale, one of whose plates is too heavily loaded, can be balanced in two ways—not only by adding enough weight to the other side to even it, but also by removing some weight from the heavier side.

Nor do I suppose that a good action cannot be performed without prevenient delight. I have sufficiently explained myself on this point in chapter four of book three. And it seems to me clearly beyond doubt that a man who has the love of

God in his heart can by the strength of his habitual love excited by the knowledge of his duty, and without prevenient delight, give a sou, for example, to a poor man, or patiently suffer some minor injustice. It seems to me that delight is necessary only when temptation is strong or love weak, if delight can yet be said to be absolutely necessary to a just man whose faith might, it seems to me, be resolute enough and whose hope strong enough to overcome the greatest of temptations, the joy or foretaste of eternal goods being capable of withstanding the sensible attractions of transitory goods.

It is true that delight or actual grace is necessary for any good action if by the word *delight* or *grace* is meant charity that is actually excited, or the delight that accompanies it, as Saint Augustine generally understands it, for clearly anything that is in no way done for love of God is worth nothing. But if you remove the equivocation and take the word *delight* in the sense I have just specified, I do not believe that you can doubt what I have just said.

But here is the difficulty. Pleasure and love are assumed to be the same thing because one is almost never found without the other and because Saint Augustine does not always distinguish them. On this assumption what one says is correct, and one may conclude with Saint Augustine, ''Quod amplius nos delectat, secundum id operemur necesse est,'' for we certainly will what we love; we can also say that we would not be able to do anything good or meritorious without delight or charity. But I hope to show in an Elucidation that I shall give on the treatise on the passions[a] that there is as great a difference between pleasure and love, voluntary or involuntary, as there is between our knowledge and our love, or to explain this difference more sensibly, as there is between the figure of a body and its motion.

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[a] On the third chapter of book five [16].

ELUCIDATION SIX

On what I said at the beginning of the tenth chapter of the first book and in the sixth chapter of the second book on method: That it is very difficult to prove that there are bodies. What ought to be thought of the proofs given of their existence.

It is quite common for men to be perfectly ignorant of what they think they know best and to know certain other things well enough of which they imagine they do not even have ideas. When their senses play a role in their perceptions they yield to what they do not understand, or understand only in very imperfect fashion; and when their ideas are purely intelligible, or contain nothing sensible affecting them, they accept incontestable demonstrations only with difficulty.

What does the ordinary man think, for example, when most metaphysical truths are proved to him, when we demonstrate for him the existence of God, the efficacy of His will, the immutability of His decrees, that there is but one God or one true cause that does everything in all things, that there is but one sovereign Reason in which all intelligences participate, that there is but one necessary love that is the principle of all created wills? He thinks we are speaking with words devoid of sense, that we have no ideas of the things we are proposing and that we would do better to keep quiet. Since metaphysical truths and arguments contain nothing sensible, men are not affected by them, and as a result they do not remain convinced by them. Nonetheless, it is certain that abstract ideas are the most distinct and metaphysical truths the clearest and most evident.

Men sometimes say that they have no idea of God nor any knowledge of His will, and often they even think this as they say it; but this is because they think they do not know what they perhaps know best. For where is the man who hesitates to answer when asked whether God is wise, just, and powerful, whether or not He is triangular, divisible, mobile, or subject to any possible change? Yet one cannot answer without fear of error as to whether certain qualities belong or do not belong to some subject if one does not have any idea of the subject. Similarly, where is the man who would dare say that God does not act in the simplest ways, that His intentions are disordered, that He creates monsters by a positive, direct, and particular will and not by a kind of necessity in order not to upset the simplicity and generality of His ways, in short, that His will could be contrary to the order of which all men have some knowledge? But if we had no idea of God's will, we might at least doubt whether He acts according to certain laws we very clearly conceive that He must follow, given that He wills to act.

Men have ideas, then, of purely intelligible things, and these ideas are much clearer than those of sensible objects. Men are more certain of the existence of God than of bodies, and when they withdraw into themselves they find the will of God, according to which He produces and conserves all beings, more clearly than the will of their best friends or of those they have spent their whole life studying. For their mind's union with God and of their will with His, i.e., with eternal law or the immutable order, is an immediate, direct, and necessary union, whereas the union they have with sensible objects, which is established only for the preservation of their health and life, gives them knowledge of these objects only in relation to this design.

This direct and immediate union, which according to Saint Augustine is known only by those whose mind is purified, enlightens us in the most secret recesses of our reason, and exhorts and moves us in the most intimate part of our heart. Through it we learn what God thinks and even what He wills, eternal truths and laws, for it cannot be doubted that we know at least some of them with evidence. But the union we have with our best friends teaches us with evidence neither what they think nor what they will. We believe we know, but we are almost always mistaken when we know only because of what they say.

Nor can the union we have through our senses with surrounding bodies enlighten us; for what the senses report is never entirely true, and often it is entirely false, as I have explained in this book. For this reason I say here that it is more difficult than one would have thought to prove definitely that there are bodies, even though our senses might assure us of it, because reason does not so readily assure us as we might think and because reason must be consulted very attentively if we are to be enlightened.

But since men are more impressionable than reasonable, and since they listen more readily to the testimony of their senses than to that of inner truth, they have always relied on their eyes to assure themselves of the existence of matter without bothering to consult their reason. This is why they are surprised when told that it is difficult to prove the existence of matter. They think that they have but to open their eyes in order to assure themselves that there are bodies, and if there is some reason to suspect an illusion, they think it suffices to approach the bodies and touch them—after which they have difficulty conceiving that one might yet have reasons for doubting their existence.

But our eyes represent colors to us on the surface of bodies and light in the air and in the sun; our ears make us hear sounds as if spread out through the air and in the resounding bodies; and if we believe what the other senses report, heat will be in fire, sweetness will be in sugar, musk will have an odor, and all the sensible qualities will be in the bodies that seem to exude or diffuse them. Yet it is certain (for the reasons that I have given in the first book of *The Search After Truth*) that all these qualities do not exist outside the soul that perceives them—at least it is not evident that they are in the bodies that surround us. Why should we conclude then, merely on the testimony of the senses that deceive us on all sides, that there really are external bodies, and even that these bodies are like those we see, i.e., like those that are the soul's immediate object, when we look at them with the eyes of the body. Whatever is to be said of this view, it certainly is not without difficulties.

Furthermore, if on the basis of what the senses report we can assure ourselves of the existence of a given body, that body is the one to which the soul is immediately joined. The most lively sensation and the one that seems to have the most necessary relation to some actually existing body is pain. Yet it often happens that those who have lost an arm feel very severe pain in it even long after the loss of the arm. They know very well that they no longer have the arm when they consult their memory or look at their body; but the sensation of pain deceives them. And if, as often happens, we assume them to have entirely forgotten what they were and to have no other senses than that through which they feel the pain in their imaginary arm, surely they could not be persuaded that they do not have an arm in which they feel such tormenting pain.

There have been those who believed they had horns on their head and others who imagined they were made of butter or glass or that their body was not shaped like other men's, that it was like that of a cock, a wolf, or an ox. They were mad, you will say, and I agree; but their soul was able to be mistaken in these things, and hence all other men can fall into similar errors if they judge objects on the testimony of their senses. For it should be noted that these madmen really see themselves as they think they are—error is not strictly in the sensation they have but in the judgment they form. If they said only that they sensed themselves or perceived themselves to be like a cock, they would not in the least be mistaken. They err solely in the fact that they believe that their body is like the one they sense, i.e., like their mind's immediate object when they consider themselves. Thus, those who believe themselves to be such as they really are, are no more judicious in their judgments of themselves than the mad if they base their judgments solely on what their senses report. They fail to be deceived, not through reason, but through good fortune.

But in the final analysis, can we be certain that those we call mad really are so? Might it not be said that they only pass for mad because their sensations are peculiar? For it is clear that a man passes for mad not because he perceives what is not but precisely because he sees the opposite of what others see, whether they are deceived or not.

A peasant, for example, whose eyes are disposed in a way to see the moon as it is, or as we only see it or shall perhaps see it some day with glasses yet to be invented, looks at it with wonder and exclaims to his companions: I see high mountains and deep valleys and seas and lakes and gulfs and high rocks![a] Do you not see many seas on the eastern side and that there is hardly anything but land and mountains toward the west and the south? Do you not see in the same area a mountain higher than any we have ever seen, and are you not amazed at an entirely black sea or a terrifying gulf that appears in the center of this star? How will his companions answer such exclamations and what will they think of him? That he is mad and fallen under the evil influences of the planet he beholds and admires. He is alone in his view and that is enough. Thus, to be mad in the opinion of others, it is not necessary really to be so; it is enough to think or to see things differently than others; for if all men believed themselves to be like cocks, he who believed himself to be as he is would surely be considered insane.

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[a] This is roughly what one sees when one looks at the moon with a telescope.

You will say, but do men have a beak at the end of their nose or a comb on their head? I do not think so. But I know nothing of the matter when I judge only according to my senses and do not know how to make proper use of them. In vain do I touch my face or my head. I feel my body and those surrounding me only with hands whose length and figure I do not know. I do not even know for sure that I really have hands; I know so only because when it seems to me that I am moving them certain motions take place in a certain part of my brain, which according to current belief is the seat of the common sense. But perhaps I do not even have this part of the brain about which so much is said and so little known. At least I am not aware of it within me, whereas I am aware of my hands. Consequently, I ought to believe that I have hands rather than that I have this little gland that is constantly the object of controversey. But I know neither the figure nor the motion of this gland, yet I am assured that I can learn only by means of them the figure and motion of my body and those surrounding me.

What, then, is to be thought of all this? That reason is not instructed by the body, that even the part of the body to which the soul is immediately joined is neither perceptible nor intelligible by itself, that neither our body nor those surrounding it can be our mind's immediate object, that we cannot learn from our brain whether it actually exists, much less whether there are bodies surrounding us; that we must therefore recognize that there is some superior intelligence that alone is capable of acting on us, and that can act on us in such a way as to truly represent to us bodies outside us, without giving us the least idea of our brain, though the motion produced in our brain is an occasion for this intelligence to reveal these bodies to us. For in short, we see the figure of bodies surrounding us with eyes whose figure we do not know; and although the colors that appear on these objects are no more lively than those depicted on the optic nerve, we see none of these latter even while we admire the splendor of the former.

But after all, under what obligation is this intelligence to reveal bodies to us when certain kinds of motion take place in our brain? Furthermore, why need there be external bodies for this motion to be stirred up in our brain? Do not sleep, the passions, and madness produce this motion without the aid of external bodies? Is it evident that bodies that cannot move one another[a] should be able to communicate to bodies they meet a motor force that they themselves do not have? Nonetheless, I would have bodies move themselves and those they strike, and set the fibers of our brain in motion. Cannot He who gives being to all things

[a] See the third chapter of the second part of book six, and the Elucidation [15] on this chapter.

also by Himself excite the motion in our brain to which our mind's ideas are attached? Finally, how is it contradictory that our soul should have new ideas while our brain keeps the same motion, since it is certain that the brain's motion does not produce the soul's ideas, that we do not even have any awareness of this motion, that only God can represent our ideas to us—as I have proved elsewhere?[a] To be completely certain of the existence of external bodies, then, it is absolutely necessary to know God, who gives us the sensation of them, and to realize that, since He is infinitely perfect, He cannot deceive us. For if the intelligence that gives us the ideas of all things wanted to amuse itself, so to speak, by representing to us bodies as actually existing—even though there were no such objects—it is clear that doing so would not be very difficult for it.

For these reasons, or reasons like them, Descartes, who wanted to establish his philosophy on unshakable foundations, thought he could not assume that there are bodies, and that he should not prove that there are on the basis of sensible proofs, even though they would seem very persuasive to the ordinary man. Clearly he knew as well as we do that he had only to open his eyes to see bodies and that we can approach them and touch them to ascertain whether our eyes deceive us in what they report. He knew the mind of man well enough to judge that such proofs had not been rejected. But he sought neither sensible probabilities nor the vain applause of men. He preferred the truth, even though scorned, to the glory of an undeserved reputation, and he preferred to seem ridiculous to insignificant minds with his doubts that to them might seem extravagant than to accept things that he did not judge certain and undeniable.

But although Descartes has given the strongest proofs that reason alone can muster for the existence of bodies, and although it is evident that God is no deceiver and that He would be said really to deceive us if we deceived ourselves by making the use we must of our mind and of our other faculties of which He is the Author—still we can say that the existence of matter is not yet perfectly demonstrated, i.e., with geometric rigor. For in philosophical matters, we must not believe anything till evidence obliges us to do so. We must make as much use of our freedom as possible; our judgments should have no greater extent than our perceptions. Thus, when we perceive bodies, let us judge only that we perceive them and that these perceptible or intelligible bodies actually exist; but why should we judge positively that there is an external material world like the intelligible world we perceive?

Perhaps you will say that we perceive bodies external to us and even at some distance from the body we animate and that therefore we can judge that they are external to us without our judgments extending beyond our perceptions. But how? Do we not see light external to us and in the sun, even though it is not there? Nevertheless, I would have these bodies we see external to us really be external to us, for in the final analysis this is beyond question. But is it not clear that there are outnesses and distances, that there are intelligible spaces in the intelligible world that is our mind's immediate object? Let us be careful here: the material world we animate is not the one we see when we look at it, i.e., when we turn the body's eyes toward it. The body we see is an intelligible body and there are intelligible spaces between this intelligible body and the intelligible sun we see, just as there are material spaces between our body and the sun we look at. Certainly God sees that there are spaces between the bodies He has created; but He does not see these bodies or spaces by themselves. He can see them only through the ideas He has of them, only through intelligible bodies and spaces. God derives His light only from Himself; He sees the material world only in the intelligible world He contains and in the knowledge He has of His volitions, which actually give existence and motion to all things. Therefore, there are intelligible spaces between the intelligible bodies that we see, as there are material spaces between the bodies we look at.

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[a] See the sixth chapter of the second part of book three and the Elucidation [10] on this chapter.

Now it must be noted that since only God knows His volitions (which produce all beings) by Himself, we can know only from Him whether there really is a material world external to us like the one we perceive, because the material world is neither perceptible nor intelligible by itself. Thus, in order to be fully convinced that there are bodies, we must have demonstrated for us not only that there is a God and that He is no deceiver, but also that He has assured us that He has really created such a world, which proof I have not found in the works of Descartes.

God speaks to the mind and constrains its belief in only two ways: through evidence and through faith. I agree that faith obliges us to believe that there are bodies; but as for evidence, it seems to me that it is incomplete and that we are not invincibly led to believe there is something other than God and our own mind. It is true that we have a strong propensity to believe that there are bodies surrounding us; I agree here with Descartes.[a] But this propensity, as natural as it is, does not constrain our belief through evidence; it merely inclines us toward belief through impression. Now, our free judgments should follow only light and evidence; and if we let ourselves be led by sense impressions, we shall be mistaken almost always.

Why are we mistaken in the judgments we form concerning sense qualities, the size, figure, and motion of bodies, if not because we follow an impression like the one that leads us to believe there are bodies? Do we not perceive that fire is hot, that snow is white, and that the sun is brilliant with light; do we not perceive sense qualities as well as bodies external to us? Yet it is certain that these sense qualities we perceive external to us are not really external to us (or if you will, nothing is certain on this matter). What reason have we, then, that besides the intelligible bodies we perceive there are still others we look at? What evidence do you have that an impression that is deceptive not only with regard to sense qualities but also with regard to the size, figure, and motion of bodies, is not so with regard to the actual existence of these same bodies? I ask what evidence of this you have, for I agree that you have no lack of probabilities.

I realize there is this difference between sense qualities and bodies, that reason corrects the impression or natural judgments related to sense qualities much more easily than those related to the existence of bodies, and even that all of reason's corrections with regard to sense qualities agree with religion and Christian morality, and that the existence of matter cannot be denied according to the principles of religion.

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[a] Meditation 6.

It is easy to understand that pleasure and pain, heat, and even colors are not modes of bodies, that sense qualities in general are not contained in the idea we have of matter, in short, that our senses do not represent sensible objects to us as they are in themselves, but as they are in relation to the preservation of our life and health. This agrees not only with reason but even more so with religion and Christian morality, as is shown in several places in this work.

But it is not so easy to ascertain positively that there are no bodies external to us as we positively ascertain that pain and heat are not in the bodies that seem to cause them in us. Certainly it is at least possible that there are external bodies. We have nothing that proves to us there are not any, and on the contrary we have a strong inclination to believe there are bodies. We have, then, more reason to believe there are bodies than to believe there are not any. Thus, it seems that we should believe there are bodies; for we are naturally led to follow our natural judgment when we cannot positively correct it through light or evidence. For since all natural judgments come from God, we can make our voluntary judgments agree with them when we find no means of discovering them to be false; and if we are mistaken in these instances, the Author of our mind would seem to be to some extent the Author of our errors and faults.

This argument is perhaps sound enough. Nevertheless, it must be agreed that it should not be taken as a necessary demonstration of the existence of bodies, for God does not invincibly urge us to yield to it. If we consent to it, we do so freely—we are able not to consent to it. If the argument I have just given is sound, we must believe it entirely probable that there are bodies; but we must not rest fully convinced by this single argument. Otherwise, it is we who act and not God in us. It is by a free act, and consequently one liable to error, that we consent and not by an invincible impression; for we believe because we freely will to do so, and not because we perceive with an evidence necessitating us to believe, as in the case of mathematical demonstrations.

Surely only faith can persuade us that there really are bodies. We cannot have an exact demonstration of other than a necessary being's existence. And if you attend closely, you will see that it is not even possible to know with full evidence whether or not God is truly the creator of the material and sensible world. For such evidence is found only in necessary relations, and there is no necessary relation between God and such a world. He was able not to create it, and if He did create it, it is because He willed to do so and willed freely to do so.

The saints in heaven see by an evident light that the Father begets His Son and that the Father and the Son produce the Holy Spirit, for these emanations are necessary. But since the world is not a necessary emanation in God, those who most clearly see His being do not see with evidence that He produces anything external. Nonetheless, I believe the blessed are certain that there is a world; but this is because God assures them of it by revealing His will to them in a way unknown to us. We here below are certain of the existence of the world because faith teaches us that God has created it, and because faith agrees with our natural judgments or our compound sensations when they are confirmed by all our senses and when they are corrected by our memory and reason.

It is true that initially faith seems to assume the existence of bodies, *fides ex auditu*. It seems to assume prophets, apostles, Sacred Scripture, miracles; but if you attend closely you will see that although only the appearances of men, prophets, apostles, Sacred Scripture, miracles, and so on, are assumed, what we learn from these supposed appearances is absolutely undeniable because, as I have proved in several places in this work, only God can represent these appearances to the mind, and because God is no deceiver, for faith itself assumes all this. Now in the appearance of Sacred Scripture and from the appearance of miracles we learn that God has created a heaven and an earth, that the Word was made flesh, and other such truths that assume the existence of a created world. Hence it is certain through faith that there are bodies, and that through it all these appearances become realities. There would be no point to my pausing here to reply at greater length to an objection that seems too abstract to the ordinary man, and I believe that the above will satisfy anyone who is not overly demanding.

From all this, therefore, it must be concluded that we can and even must correct the natural judgments or the compound perceptions relating to the sensible qualities we attribute to bodies surrounding us or the one we animate. But as for the natural judgments relating to the actual existence of bodies, although in an absolute sense we can avoid forming voluntary judgments that agree with them, we should not do so, because these natural judgments are in perfect agreement with faith.

Furthermore, I have made this observation mainly to provoke some serious thought about the following truths: that bodies cannot act on, or reveal themselves to, minds, and that the bodies we look at when we open our eyes are quite different from the ideas that represent them and that affect us; that our soul finds its light, its life, and its sustenance only in God; that it can have an immediate and direct relation only with Him and that the relation it has with its body and those surrounding it necessarily depends on the relation it has with the efficacious and luminous substance of the Divinity—a substance that discloses creatures to us as possible or as existing or as belonging to us, depending on the different ways in which it affects us insofar as it represents them: (1) as possible when the perception of the idea affecting us is pure, (2) as existing when the perception is sensible, and (3) as belonging to us and forming a part of us when the perception is very absorbing and lively, as is pain. I realize that the ordinary man will not agree with this observation and that, depending on whether he has too few or too many animal spirits, he will either ridicule or be alarmed at the arguments I have just given, for the imagination cannot endure strange or abstract truths; it views them either as terrifying specters or as ridiculous shadows. But I prefer to be the object of the mockery of strong imaginations and the object of the fear of weak and fearful imaginations than to fail in my duty to the truth and to those who, in struggling valiantly against the body's influence on their mind, can distinguish the replies of the wisdom that enlightens us from what their senses tell them and from the confused din of the imagination, which disturbs and seduces us.

ELUCIDATION SEVEN

On the fifth chapter of the second book, where I speak about memory and spiritual habits.

I tried in this chapter to avoid speaking about memory and spiritual habits for several reasons, the chief of which is that we have no clear idea of our soul. For what means is there to explain clearly what the dispositions are that the soul's operations leave in it, which dispositions are its habits, since we do not even know clearly the nature of the soul? It is evident that we cannot distinctly know the changes of which a being is capable when we do not distinctly know the nature of that being. For if, for example, men had no clear idea of extension, they would struggle in vain to discover its figures. They would try in vain to explain the ease with which a wheel turns on its axle by the use we make of it. Yet because I am called upon to speak on a matter that is not known to me in itself, I shall take the route below in order to follow only clear ideas.

I assume that only God acts in the mind and represents to it the ideas of all things, and that if the mind perceives some object by a very clear and vivid idea, it is because God represents this idea to it in a very perfect way.

I assume also that since the will of God agrees entirely with order and justice, it is enough to be entitled to a thing in order to obtain it. Upon these assumptions, which are distinctly conceived, spiritual memory can be explained easily and clearly. For since order demands that minds that have often thought about some object should think about it again more easily and have an idea of it clearer and more vivid than those who have thought about it but little, the will of God, which constantly operates according to order, represents the clear and vivid idea of this object to their mind as soon as they desire it. Consequently, according to this explanation, memory and the other habits of pure intelligences would consist not in a facility of operation resulting from certain modifications of their being but in an immutable order of God, and in a right the mind acquires over the things that have already been submitted to it; and the mind's whole power would depend immediately and solely on God alone, with the force or facility for acting that all creatures find in their operations being in this sense only the efficacious will of the Creator. And I do not think it necessary to give up this explanation on account of the evil habits of sinners and of those who are damned. For though God does whatever is real and positive in the actions of sinners, it is evident from the things I have said in the first Elucidation that God is not the author of sin.

Nonetheless I believe and feel I must believe that after the soul's action there remain in its substance certain changes that really dispose it to this same action. But as I do not know them, I cannot explain them; for I have no clear idea[a] of my mind, in which I could discover all the modifications of which it is capable. Through arguments from theology, and not through clear and evident arguments, I believe that the reason why pure intelligences see objects they have already considered more clearly than others is not precisely and solely because God represents these objects to them in a more vivid and more perfect way, as I have just explained, but because they are really more disposed to receive the same action of God. Just as the facility to play instruments that certain people require does not consist precisely in the fact that the animal spirits necessary for motion of the fingers have more action and force in them than in other men, but in the fact that the routes by which the spirits flow are smoother and more connected from the habit of exercise, as I have explained in the chapter I am elucidating. Yet I agree that all the uses of memory and the other habits are not absolutely necessary for those who, being perfectly united to God, find in His light every kind of idea, and in His will all the facility for acting that they could wish.

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[a] See the Elucidation on chapter 7 of part 2 of book 3.

ELUCIDATION EIGHT

On the seventh chapter of the second book. Summary of my proofs for, and explanations of, Original Sin. And replies to those objections that seem to me strongest.

In order to make an orderly reply to the difficulties that might be generated in the mind concerning Original Sin and the way in which it is passed from father to son, I feel that I must briefly set out what I said on this topic in several passages of the *Search after Truth*. Here, then, are my main proofs. I have arranged them in such a way as to make them more intuitive for those who wish to study them.

I

God wills order in His works; what we clearly conceive to conform to order, God wills; what we clearly conceive to be contrary to order, God does not will. This truth which is ascertained through the inner sensation of consciousness is evident to all those who are capable of a steady and purified contemplation of the infinitely perfect being who contains this immutable order,[a] the law of all intelligences, and even of God Himself. Nothing can shake them from this when they see clearly that every difficulty that can be raised against this principle is merely a result of our ignorance of what would have to be known to resolve it,[b] and the false or imperfect idea we have of divine providence.

II

God has no other end in His operations than Himself. Order would have it so.

III

God creates and preserves the mind of man in order that it be concerned with Him, know Him, and love Him, for the end of God's works is God. Order requires that it be so. God cannot will that we love what is not worthy of love or that what is least worthy of love be most loved. Thus, it is evident that nature is

[a] I explain the nature of immutable order in the tenth Elucidation below.

[b] Cf. *Dialogues on Metaphysics* on Providence.

corrupt and in a state of disorder, because the mind is naturally led to love bodies that are not worthy of love or have no efficacy for acting on it, and because the mind often loves them more than God Himself. Original Sin, or the disorder of nature, therefore has no need of proof; for each of us is sufficiently aware of a law in himself that captures and disorders him, a law not established by God because it is contrary to the immutable order of justice, which is the inviolable rule for all His volitions.

IV

Nonetheless, man before his fall was warned by prevenient sensation, and not by clear knowledge, as to whether he should join himself to, or separate himself from, the bodies surrounding him. Order would have it so. It is a disorder that the mind should be obliged to concern itself with bodies. It can be joined to them, but it is not created for them. It must therefore know God and sense bodies. Furthermore, since bodies cannot be its good, the mind could join itself to them only with difficulty, if all it did were to know them such as they are, without sensing in them what in fact is not in them. Thus, false good must be discerned through a prevenient sensation in order to be loved by an instinctive love, and true good must be known through clear knowledge in order to be loved by a free and rational love. Finally, God creates and preserves man in order to be known and loved by him; therefore, his mind's capacity must not be filled, even partially and in spite of himself, by knowledge of the infinite configurations and figures of the bodies surrounding him and of the one he animates. Yet in order to know through clear knowledge whether a given fruit at a given time is nourishing for the body, it manifestly would be necessary to know so many things and to reason so much that a mind of the greatest scope would be entirely occupied thereby.

V

But although the first man was warned through prevenient sensations as to whether or not he should make use of the bodies surrounding him, he was not excited by involuntary or rebellious impulses. He even erased from his mind the ideas of sensible things when he so wished, whether he was making use of them or not; for order would have it so. The mind can be united to the body, but it must not be dependent upon it; it should command the body. Furthermore, all the love that God places in us must end in Him, for God produces nothing in us that is not for Him. Finally, bodies are not worthy of love; they are below what in us is capable of loving. Therefore, in nature's first institution bodies were unable to turn the mind toward them or lead it to consider and love them as goods.

VI

Bodies surrounding us act on our soul only when they produce certain kinds of motion in our body and when this motion is communicated to the main part of the brain. For it is according to changes that take place in this part that the soul itself changes and finds itself excited by sensible objects. I have already sufficiently shown this and experience demonstrates it. Given this, it is clear from the preceding article that the first man arrested whenever he wished the motion communicated to his body, or at least that motion communicated to the principle part of his brain. Order would have it so, and consequently He whose will always conforms to order can do nothing against order although He is omnipotent. Thus, man could in certain instances suspend the natural law of the communication of motion because he was without concupiscence and because he experienced no involuntary or rebellious impulses within him.

VII

But having sinned, the first man lost this power. Order would also have it so. For it is not right that in favor of a rebellious sinner there should be exceptions to the general law of the communication of motion, exceptions other than those that are absolutely necessary to the preservation of our life and civil society. Thus, since man's body is constantly disturbed by the action of sensible objects, and since his soul is agitated by the disturbances in the main part of his brain, he is dependent upon the body to which he was merely joined and over which he had ruled before his sin.

VIII

Now this is how the first man was able to sin. It is natural to love pleasure and to enjoy it, and this was not forbidden to Adam. Such is also the case with joy. We can delight in beholding our natural perfections. This is not evil in itself. Man was made to be happy, and it is pleasure and joy that at present make him happy. The first man enjoyed pleasure, then, in the use he made of sensible goods. He also felt joy in beholding his perfections, for one cannot consider oneself as happy or perfect without thereby experiencing joy. But he did not feel such pleasure in his duty, for although he knew that God was his good, he did not sense this, as I have proved in several places.[a] Thus, the joy he was able to find in his duty was not sensible. Let all this be granted. Since the first man did not have the capacity of an infinite mind, his pleasure or joy diminished the mind's clear perception, which informed him that God was his good, the sole cause of his pleasures and joy, and that he was to love only Him. For pleasure is in the soul and modifies it; as a result, it exhausts our capacity for thought to the extent that it affects and excites us. This is something that we learn through experience or through the inner sensation we have of ourselves. We can see, then, that since the first man let his mind's capacity be gradually shared or filled by the lively sensation of a presumptuous joy, or perhaps by some sensible pleasure or love, God's presence and the thought of his duty were erased from his mind because he failed to courageously follow his light in the search for his true good. Having thus been distracted, he was able to fall, for his main actual grace was his light, or the clear knowledge of his duty, because he then had no need of the prevenient delights that we now need in order to resist concupiscence.

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[a] See the Elucidation on chapter 5 [1].

IX

It should also be noted that neither the prevenient sensations that Adam experienced in the use of corporeal goods nor the joy he found in considering his happiness or perfection are really the cause of his fall, for he realized that only God was capable of making him feel pleasure or joy. Thus, he should have loved only Him, since only the true cause of our happiness should be loved. Since nothing disturbed the first man's knowledge and light when he wished to keep it entirely pure, he should have and could have erased from his mind all the sensations that divided it and that placed it in some danger of being distracted and losing sight of Him who enlightens and fortifies it. He should have remembered that if God did not allow him to perceive Him, but only know Him as good, it was in order that he might merit his reward more quickly through the continual use of his freedom.

Given, then, that Adam and Eve sinned, and that subsequent to their sin they felt involuntary and rebellious impulses within themselves, I maintain that their children had to be born sinners and like them subject to the impulses of concupiscence. Here are my reasons.

X

I have shown at great length in the chapter[a] that occasions this Elucidation that the communication between the brain of the mother and that of her child is such that all the traces and motion occurring in the mother's brain are excited in the child's. Thus, since the child's soul is joined to its body at the same moment it is created, because the formation of the body requires God, as a result of His general will, to give it a soul to *inform* it, it is clear that at the same instant that this soul is created it has corrupt inclinations, and that it is directed toward bodies, because from this moment on, it has inclinations in response to the motion occurring in the brain to which it is joined.

XI

But because it is a disorder for the mind to be turned toward bodies and to love them, the child is a sinner and in a state of disorder as soon as it is created. God, who loves order, hates the child in this state. Yet its sin is not voluntary; its mother conceives it in iniquity due to the communication established by the natural order between the brain of the mother and that of her child, for only through the body, through generation, is the soul, which is not begotten, corrupted and given to Original Sin.

XII

Now this communication between the brain of the mother and that of her child is a very good arrangement for several reasons. (1) Because it is useful and perhaps necessary to the formation of the *foetus*. (2) Because the child could thereby have communicated with its parents, for it was fitting that the child should know to whom it owed the body it animated. Finally, the child could have known only by means of this communication what was occurring in the world outside and the thoughts it should have had pertaining thereto. Since it had a body, it should have had thoughts related to it and it should not have been deprived of the view of the works of God among which it lived. There are probably many reasons for this communication other than those I have related, but these are enough to justify such communication and to remove from all reproach the conduct of Him whose every volition necessarily conforms to order.

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[a] Seven of book 2. <Reference occurs in fifth edition only.—Trans.>

XIII

Yet order would not be conformed to if a righteous child should have received traces of sensible objects in spite of itself. And if the soul of children were created a single moment before being joined to the body, if it were for a single moment in a state of innocence or order, it would be fully entitled, by the necessity of the immutable order or eternal law, to the power of suspending this communication, just as the first man before his sin arrested whenever he wished the impulses that were excited in him, for the immutable order would have it that the body obey the mind. But since the soul of children has never been pleasing to God, it has never been fitting that God change the law of the communication of motion in their favor. Thus, it is right for children to be born sinners and in a state of disorder; and the cause of their sin is not the order of nature—this order is wisely instituted and just—but the sin of those to whom they owe their origin. In this sense it is not right that a sinful father should produce children more perfect than himself or that they should have a power over their body that their mother does not have over her own.

XIV

It is true that after Adam's sin, which corrupted and upset everything, God by reordering nature could have corrected the disorder this sin had caused. But God does not change His volitions in this way. He wills nothing that is not just. What He once wills, He wills forever. He does not correct Himself or regret anything. His will is constant. His eternal decrees do not depend on the inconstancy of a man's will, and it is unjust that they should be subject to it.

XV

But if it is permitted to enter into God's purposes and to speak our thoughts on the motives He might have had for establishing the order I have just deduced and for permitting the first man's sin,[a] it seems to me that no sentiment more worthy of God's grandeur or more in conformity with both religion and reason can be had than to believe that God's main intention in His external operations is the Incarnation of His Son, that God established the order of nature and allowed the disorder that befell it in order to promote this great work, that He permitted all

[a] See the second and fifth Dialogues of the *Conversations chrétiennes*, Paris ed., 1702.

men to be subject to sin so that no man[a] should glory in himself, and that He even permitted concupiscence in the most perfect of men so that they should not be vainly complacent with themselves. For when we consider the perfection of our own being, it is difficult to despise ourselves unless we at the same time see and love the sovereign good in the presence of which all our perfection and grandeur dissipates and is destroyed.

I admit that concupiscence can be the occasion of our merit, and that it is right that the mind should for a while follow order with difficulty so as to merit being eternally subject to it with pleasure. I would have it that partly in view of this God permitted concupiscence after having forseen sin. But since concupiscence is not absolutely necessary to our merit, if God permitted it He did so because He willed that we not be able to do good without the help Jesus Christ has merited for us, and that man not be able to boast of his own resources. For it is clear that man cannot struggle against himself and win unless he is animated by the spirit of Jesus Christ, the second Adam, who, as leader of the faithful, inspires them with feelings entirely contrary to the feelings of concupiscence they have derived from the first Adam. For Jesus Christ was given to us by God, says Saint Paul[b], to be our *wisdom, our justice, our sanctification, and our redemption in order that he who glorifies himself does so only in the Lord.*

XVI

Given, then, that children are born with concupiscence, it is evident that they are truly sinners because their heart is turned toward bodies as far as possible. There remains in their will only natural love, and this love is disordered. Thus, there is nothing in them that God can love, because God cannot love disorder.

XVII

But when they have been reborn in Jesus Christ, that is, when their heart has been turned toward God either by an actual impulse of love or, rather, by a habit, or an inner disposition, such as results from a perfect act of love of God, then concupiscence is no longer sinful[a] in them, for concupiscence is no longer alone in their heart and no longer dominates it. Habitual love that remains in them through the grace of baptism in Jesus Christ is freer or stronger than the love that is in them through the concupiscence they have from Adam. They are like the righteous who without losing their righteousness follow the impulses of con-concupiscence is no longer sinful[c] in them, for concupiscence is no longer alone not freely consent to these impulses.

XVIII

And it should not be considered very strange if I say that it could even happen that at the time children are baptized they love God with a voluntary love. For, given that the second Adam is the opposite of the first, why could he not, at the time of rebirth, deliver children from the servitude of their bodies to which they are subject only because of the first Adam, in order that, enlightened and moved by a lively and efficacious grace to love God, they should all love Him with a free and rational love, without the first Adam preventing them from doing so. You will say that they do not notice that their body stops acting on their mind for a single moment; but should you be surprised that they do not see what is not visible? Only a single instant is needed to perform this act of love that changes the heart. And since this act can be formed in the soul without traces of it occurring in the brain, you should not be surprised if children never have any recollection of it, for we have no memory of things whose traces are not preserved in the brain.

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[a] Aug. *In Jul.* bk. 6, ch. 3.

[b] 1 Cor. ch. 1 [vv. 30–31].

[c] Aug. *De nupt. & concup.* ch. 25.

XIX

Saint Paul teaches us that the old man, or concupiscence, is crucified with Jesus Christ, and that we die and are buried with him through baptism. Are we not then delivered from the body's influence on the mind, and does not concupiscence die at the same time? True, it is regenerated, but having been destroyed and having left children in a state of loving God, it can no longer do them evil, although it might be regenerated in them. For when there are two different loves in one heart, one natural and the other voluntary, order would have it that only the love that is voluntary should be valued. And if at baptism children loved God by an act that was in no way free (subsequently loving bodies by many acts of the same kind), order would perhaps not permit God to value a single act more than many acts all of which were natural and involuntary. Or rather, if these opposing loves were of equal strength, He would value the one that was later for the same reason that when there have been two successive, opposing loves in a single heart, God always values the later because grace is lost through a single mortal sin.

XX

Nevertheless, it cannot and should not be denied that God can, without suspending the domination of its body over its mind, lead the child into righteousness, or turn its will toward Him, by placing in its soul a disposition[a] like the one found after an actual impulse of love for God. This way of acting will perhaps not appear as natural as the other, for we do not clearly conceive what these residual dispositions might be. But this should not be surprising, for having no clear idea of the soul (as I have proved elsewhere[b]), we should not be surprised if we do not know all the modifications of which it is capable. Yet the mind cannot be fully satisfied by things it does not clearly conceive. An extraordinary miracle seems to be necessary to give the soul these dispositions without some previous act. This cannot be done through means that seem to be the simplest. Instead of the second Adam producing in the mind of the child being baptized the opposite of what the first Adam produced there, it is enough for the child to be reborn that God should act in it through the ordinary means according to which He sanctifies adults. For since the child at this moment has no sensations or impulses that divide its capacity for thinking and willing, nothing prevents it from knowing and loving its true good. I say nothing more of the matter because it is not necessary to know precisely how the regeneration of children occurs provided that we grant a true regeneration in them, i.e., an inner, real justification caused, if you will, by the acts that accompany the sacrament, and especially through the habits of faith, hope, and charity infused into the soul without any previous acts. If I propose an explanation so contrary to prejudice, I do so in order to content those who reject, albeit without reason, spiritual habits, and to prove to them the possibility of regeneration in children, for *imputation* seems to me to contain a manifest contradiction. God cannot view as righteous and love creatures that are at the same time in a state of disorder, although, because of Jesus Christ, He can intend to restore them to order and to love them when they have been so restored.

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[a] See Elucidation 7.

[b] See ch. 7 of the second part of book three and its Elucidation [11].

Objections

Against the proofs for, and explanations of, Original Sin.

First Objection

Against the first article.[a]

God wills order, it is true; but it is His will that does so. His will does not presuppose order. All that God wills is in order for the sole reason that God wills it. If God wills that minds should be subject to bodies and that they should love and fear them, this would not be a state of disorder. If God willed that twice two be four, He would not lie in saying that twice two are not four. This would be a truth. God is the principle of all truth, He is the master of all order. He supposes nothing, neither truth nor order, He does all things.

Reply

This upsets everything. There is no longer any science,[b] any morals, any indubitable proofs of religion. This consequence is clear to anyone who follows step by step the false principle that God produces order and truth by an entirely free will. But for certain people this perhaps will not count as a reply.

I reply than that God can do nothing and can rule nothing without knowledge, and that therefore His volitions suppose something; but what they suppose is not something created. Order, truth, eternal wisdom is the exemplar of all God's works, and this wisdom is not created. God who creates all things did not create it, although He is always begetting it through the necessity of His being.

All that God wills is in order for the sole reason that God wills it, this I admit. But this is because God cannot act against Himself, against His own wisdom and light. He is indeed able not to produce anything external to Himself; but if He wills to act, He can do so only according to the immutable order of wisdom that He necessarily loves. For religion and wisdom teach me that He does nothing without His Son, without His Word, without His wisdom. Thus, I have no fear in saying that God cannot positively will that the mind should be subject to the body because the wisdom according to which God wills all that He wills clearly shows me that this would be contrary to order. And I clearly see it in this same wisdom, because it is the sovereign, universal Reason in which all minds participate, for which all intelligences are created, and through which all men are rational. For no man is his own reason, light, or wisdom unless perhaps it is when his reason is an individual reason, his light a false glow, his wisdom a madness.

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[a] For each objection it is necessary to review the article against which it was made.

[b] See Elucidation [10] below on the nature of ideas.

Since most men do not distinctly know that only Eternal Wisdom enlightens them, and that intelligible ideas that are their mind's immediate object are not created, they imagine that eternal laws and immutable truths are established as such by a free volition of God; and this is what led Descartes to say that God could have made twice four not equal eight, or the three angles of a triangle not equal two right angles, "because," he says, "there is no order, no law, no ground [*raison*] of goodness and truth that does not depend on God." And because it is He "who as sovereign legislator has ordained and established the eternal truths."[a] This learned man did not notice that there was an order, a law, a sovereign reason that God necessarily loves, which is coeternal with Him and according to which He necessarily acts, given that He wills to act. For God is indifferent in what He does external to Himself, but He is not indifferent, although perfectly free, in the way in which He does it; He always acts in the wisest and most perfect way possible. He always follows the immutable and necessary order.[b] Thus, God is capable of not making minds or bodies; but if He creates these two kinds of beings, He must create them by the simplest means and arrange them in a perfect order. For example, He can join minds to bodies, but I maintain that He cannot subject the former to the latter, unless, as a result of the order He always follows, the sin committed by minds should oblige Him to do so, as I have already explained in the seventh article and in the first Elucidation near the end.

In order to anticipate certain charges that might be raised against this, I feel I must say that men are wrong in consulting themselves when they wish to know what God can do or will. They should not judge His volitions according to the inner sensation they have of their own inclinations. They would often construct an unjust, cruel, and sinful God in order to make Him omnipotent. They must divest themselves of the principle of their prejudices, which makes them judge everything in relation to themselves. They should attribute to God only what they clearly conceive to be contained in the idea of the infinitely perfect being, for things must be judged only through clear ideas. Then the God they will adore will not be like those of antiquity, who were cruel, adulterous, and carnal, like the people who had imagined them. He will not even be like the God of certain Christians who, in order to make Him as powerful as the sinner would like to be, give Him the absolute power of acting against all order, of letting sin go unpunished, and of condemning people to eternal punishment, no matter how righteous or innocent they might be.

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[a] Reply to the sixth set of objections against his *Meditations*, art. 6, art. 8. Letter 68 of vol. 3 [Ed. Clersellier].

[b] See the Elucidation of the sixth chapter of the second part of book 3, or the ninth *Dialogue on Metaphysics*.

Second Objection

Against the first article.

If God wills order, who creates monsters (I do not say among men, who have sinned, but among animals and plants)? What is the cause of the general corruption of the air that causes so many diseases? By what order are the seasons upset and the fruits of the earth scorched by the sun or by ice? Is to give an animal entirely useless parts or to freeze fruit after completely forming it to act according to wisdom and order? Is it not rather that God does what pleases Him and that His power is above all rule and order? For (to speak of things of greater consequence than fruit with which anything can be done) the earth from which God makes vessels of anger is the same as that from which He makes vessels of mercy. We often see injustice enthroned, virtue cruelly oppressed, and impiety in continuous prosperity.

Reply

Here are difficulties that serve only to obscure the truth, because they are born only of the mind's darkness. We know that God is just; we see that evildoers are happy. Must we deny what we see and doubt what we know because we are perhaps dense enough not to know and skeptical enough not to believe what religion teaches us concerning future punishments? Likewise, we know that God is wise, and that everything He does is good. We also see monsters or defective works. What is one to believe? That God has erred or that these monsters are not His work. Surely if one has any sense or strength of mind, one will believe neither one nor the other, for it is evident that God does everything and that He can do nothing that is not as perfect as it can be in relation to simplicity and the small number of means He employs and must employ in the formation of His work. One must stand by what one sees, without being disturbed by difficulties it is impossible to resolve when the cause of this impossibility is our ignorance. If ignorance fashions difficulties, and if similar difficulties upset the most firmly established opinions, will there be anything certain among men who do not know all things? What? Will the most brilliant light not be able to chase the least darkness, and will the slightest darkness obscure the clearest and most vivid light?

But although dispensation from replying to such difficulties can be had without weakening the principle we have established, it is nevertheless good to know that they can be answered. For the mind of man is so unjust in its judgments that it might perhaps prefer opinions that seem to be the consequences of these imaginary difficulties rather than constant truths that can be doubted only when one wills to doubt them and ceases to consider them in order to do so. I say, then, that God wills order[a] although there are monsters, and that it is even because God always wills and acts according to the immutable order of His perfections that there are monsters. Here is the reason for this.

Order demands that the laws of nature by which God produces this infinite variety found in the world be very simple and small in number, as they in fact are, for this conduct bears the mark of an infinite wisdom. Now, the simplicity of these general laws produces in certain particular cases, due to the disposition of the subject, irregular kinds of motion, or rather, monstrous arrangements of them, and consequently, it is because God wills order that there are monsters. Thus, God does not will positively or directly that there should be monsters, but He wills positively certain laws of the communication of motion, of which monsters are necessary consequences. And He wills these laws because, being very simple, they are always capable of producing that variety of forms which we cannot admire too much.

For example, as a result of the general laws of the communication of motion, there are bodies that are thrust toward the center of the earth. The body of a man or an animal is one of these bodies; it finds no support in the air and comes down on its feet. Would justice and order have it that God change His general volitions for this particular case? This surely does not seem very likely. The animal, then, must injure or maim its body. We must reason in the same way concerning the generation of monsters.

Order would have it that all beings should have what is necessary to their preservation and to the propagation of their species, provided that this can be done by means that are simple and worthy of the wisdom of God. Thus, we see that animals and even plants have the general means to preserve themselves and to continue their species; and if some animals lack them in certain particular cases, this is because the general laws according to which they have been produced have not been able to allow it, because these laws are concerned not only with them but generally with all beings, and because the general gain is to be favored over the individual.

It is evident that if God were to make only one animal, He would not make it a monster; but order would have it that God not make this animal according to the same laws according to which He now produces all the others. For God's action must be proportionate to His intentions. By the laws of nature God wills to make not a single animal but a whole world, and He must make it by the simplest means as is required by order. It is enough, then, that this world should not be monstrous or that the general effects should be worthy of the general laws in order that nothing reprehensible be found in God's conduct.

If God had established particular laws for particular changes, or if He had placed in each thing a *nature* or a particular principle of all the motion it undergoes, I grant that it would be difficult to reconcile His wisdom with so many obvious disorders. It would perhaps be necessary to admit either that God does not will order or that He is unable to correct disorder. For in the final analysis, it does not seem to me possible to combine the almost infinite number of secondary causes or powers, virtues, qualities and natural faculties, with nature's so-called tricks or disorders without offending the infinite power and wisdom of the Author of all things. Since God does all things, appeal must be had to the simplicity of general laws in order to justify divine Providence, as will be found explained elsewhere.[a]

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[a] See the *Dialogues on Metaphysics* on Providence. Dialogue 9 ff.

Objection

Against the second article.

God can never act for Himself. When one is wise, one never does anything useless, and everything God would do for Himself would be useless, for He lacks nothing. God is fully self-sufficient. He has by the necessity of His being all the good He could possibly will for Himself; He wishes nothing for Himself. Therefore, He does nothing for Himself because He acts only through the efficacy of His volitions. The nature of good is to be communicated and distributed, to be useful to others rather than to one's self, to search out and, if possible, to create people whom one can make happy. Thus, since God is absolutely and essentially good, it is contradictory that He should act for Himself.

Reply

God can act *for Himself* in two ways, either to draw some profit from what He does or so that His creature might find its perfection and happiness in Him. I shall not examine here[b] whether God acts for Himself in the first way, and if, in order to receive honor worthy of Him, He has created and restored all things in His Son, in whom, according to Scripture, all things subsist. I maintain only that God can neither create nor conserve minds in order for them to know and love creatures as their good or the cause of their happiness, because creatures are not their good or the cause of their happiness. It is an immutable, eternal, and necessary law that they should know and love God as I have explained in the third article. Thus, this is not an objection against my principle but rather a confirmation of it. And if it is certain that the nature of good is to be distributed and communicated externally (for I shall not examine this axiom), it is clear that since God is absolutely and essentially good, it is a contradiction that He should not act for Himself in the sense that I would have it.

First Objection

Against the fourth article.

Since ignorance is a consequence of sin, Adam before his fall had perfect knowledge of the nature of his body as well as all those surrounding it. He did not need to be advised as to what he should do for the preservation of his life. He had to know perfectly the nature of all the animals, for example, in order to assign to them, as he did, the names that belong to them. For it falls to wise men alone, say Plato and Pythagoras, to assign names to things.

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[a] See the *Treatise on Nature and Grace*, and my replies to Arnauld or the *Dialogues on Metaphysics* already cited.

[b] See the ninth *Dialogue on Metaphysics*.

Reply

This is a mistake. Ignorance is neither an evil nor a consequence of sin; error or mental blindness is an evil and a consequence of sin. Only God knows everything and is ignorant of nothing, and there is a certain amount of ignorance in the most enlightened intelligences. Whatever is finite cannot comprehend the infinite; thus, no mind can even comprehend all the properties of triangles. At the moment of his creation Adam knew everything that it was proper for him to know and nothing more. It was not proper for him to know exactly the disposition of all the parts of his body or of those he made use of. I have given the reasons for this in this article and elsewhere.[a]

In Scripture the assignment of names is a mark of authority rather than of perfect knowledge.[b] Since the Lord of heaven had made Adam lord of the earth, He wished that Adam give names to the animals as He Himself had given to the stars. It is clear that sounds or words do not and cannot naturally have any relation to the things they signify, whatever the divine Plato and the mysterious Pythagoras should say. We might perhaps be able to explain the nature of a horse or of an ox in an entire book; but a word is not a book, and it is ridiculous to imagine that monosyllables such as *sus*, which in Hebrew signifies a horse, and *schor*, which signifies an ox, represent the nature of these animals. Yet there is some likelihood that these are the names that Adam gave them, for they are found in Genesis.[c] And even the author of Genesis asserts that the names Adam gave to the animals are the same names that were in use during his time, for I do not see that he could have meant anything else by these words: ‘‘Omne quod vocavit Adam animae viventis, ipsum est nomen ejus’’ [Gen. 2:19].

I will grant that Adam gave names to the animals that are somehow related to their nature, and I will subscribe to the learned etymologies that an author of this century gives for them. I will grant that the first man called the larger domestic animals *Behemoth* because they remained silent, the ram *Ajil* because it is strong, the billy goat *Sair* because it is shaggy, the swine *Chazir* because it has small eyes, the ass *Chamor* because in the east there are many such animals that are red. But I do not see that anything other than opening one's eyes would be necessary to know whether the billy goat is shaggy, the ass red, or whether the swine has small or large eyes. What we call a beast or a large domestic animal Adam called *Beir* and *Behemoth*, because these beasts are gross and dumb. What is to be concluded from this? That he knew their nature perfectly? This is not clear. I would infer, rather, that the appropriate conclusion is that since Adam was simple enough to question an ox as the largest of domestic animals, and since he was surprised that it could not answer, he looked down on it and therefore disdainfully called it by the name *Beier* and *Behemoth.*

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[a] Vol. 1. ch. 5.

[b] ‘‘Omnibus eis nomina vocat.’’ Ps. 47 [v.12].

[c] 49:17; 32:5.

Second Objection

Against the fourth article.

There are prevenient sensations that are uncomfortable and that cause pain. Adam was innocent and righteous; he therefore should not have been afflicted by such sensations. He therefore should have conducted himself in all instances through reason and light, and not by means of prevenient sensations like those we now have.

Reply

I grant that there are prevenient sensations that are unpleasant and painful; but these sensations never caused any pain to the first man, because as soon as they caused him pain he willed no longer to be afflicted by them, and exactly when he had this volition he was no longer affected by them. These sensations served only to give him deferential warning as to what he should or should not do. They did not upset his felicity; they only made him understand that he could lose it and that He who made him happy could also punish him and make him miserable if he were unfaithful.

To be convinced that the first man never felt any lively pain that caught him by surprise, there are two things to consider. The first is that pain is very mild when the motion to which it is joined is very weak, because it is always proportionate to the strength of the motion that is communicated to the main part of the brain. The second, that it is the nature of motion to occupy a duration of time, and that it cannot be violent at the first instant that it is communicated to particles such as the nerves of our body, which are rather slack between the brain and the skin. On this supposition it is clear that the first man never felt any violent pain that took him by surprise or that was capable of making him unhappy, for he was able to arrest the motion causing it. But if he was able to stop the motion at the same instant that it began its action, certainly he would not have failed to do so, because he wished to be happy and because aversion is naturally joined to the sensation of pain. Besides this, he deserved to be protected in a special way because of his innocence.

Adam, then, never suffered violent pain. But I do not think we should say that he never even felt mild pain as would be the case when we taste a piece of green fruit thinking that it is ripe. His felicity would have been very slight had it been upset by such insignificant things, for delicacy is a mark of weakness, and pleasure and joy are insecure when wiped out by the least thing. Pain truly disturbs happiness only when it is involuntary and when it subsists in us in spite of us. Jesus Christ was still happy on his cross although he suffered great pains, because he suffered nothing that he did not wish to suffer. Thus, given that Adam did not suffer anything despite himself, he cannot be said to have been made unhappy before his sin because, on the present hypothesis, he was advised by prevenient (though deferential and subdued) sensations of what he was to avoid for the preservation of his life.

Objection

Against the fifth article.

Adam felt prevenient pleasures; prevenient pleasures are involuntary impulses. Therefore, Adam was moved by involuntary impulses.

Reply

I reply that in Adam's case his sensations preceded his reason. I have given the proofs of this in the fourth article. But I deny that they preceded his will or that they excited any rebellious impulses in it. For Adam willed to be warned by these sensations of what he was to do for the preservation of his life. But he never willed to be moved despite himself, for that is a contradiction. Furthermore, when he wanted to concentrate on contemplating truth without the least mental distraction, his passions and senses were in a state of perfect tranquillity. Order would have it so, and it is a necessary consequence of the absolute power he had over his body.

I reply, second, that it is not true that the soul's pleasure is the same thing as its impulse or its love.[a] Pleasure and love are two modes of the soul, but pleasure has no necessary relation to the object seeming to cause it, while love is necessarily related to the good. Pleasure is to the soul what figure is to body, and motion is to body what love is to the soul. Now, the motion of a body is very different from its figure. I grant that the soul, which is constantly urged toward the good, moves toward it, as it were, more easily when it has a sensation of pleasure than when it suffers pain, just as a body when struck rolls more easily when it has a spherical figure than when it has the figure of a cube. But the figure of a body is different from its motion, and it can be spherical and remain at rest. True, minds are not like bodies; they cannot feel pleasure without having an impulse, because God who makes and preserves them only for Himself constantly urges them toward the good. But this does not prove that pleasure is the same thing in the soul as its impulse, for two things, though different, can yet always be found together.

I reply, finally, that even if pleasure were not different from the soul's impulse or love, the pleasure felt by the first man while making use of corporeal goods would not have led him to love these bodies. The soul is led toward the object that causes pleasure in it by the pleasure itself, granted; but the fruit that we eat with pleasure does not cause this pleasure in us. Bodies cannot act on the soul or in any way make it happy; only God can do so. We err in thinking that bodies have in them what we sense upon the occasion of their presence. Adam before his sin was not stupid enough to imagine that bodies were the cause of his pleasures. Thus, the motion accompanying his pleasures led only his body and not his heart toward sensible objects. If pleasure contributed to the fall of the first man, it was not by doing in him what it now does in us; it was only because occupying or dividing his capacity for thought, it erased or diminished in his mind the presence of his duty and true good.

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[a] See the Eludication of ch. 3 of book 5 [14].

Objection

Against the sixth article.

What likelihood is there that the immutable will of God should have been dependent on the will of a man, and that in favor of Adam there should have been exceptions to the general law of the communication of motion.

Reply

At least it is not clear that there could not have been such exceptions. But it is clear (1) that the immutable order demands that the body be subject to the mind, and (2) that it is a contradiction that God should not love and will order.[a] For God necessarily loves His Son, that Wisdom to whom He communicates His entire substance. Before the first man's sin, then, there had to be exceptions in his favor to the general law of the communication of motion. This might seem rather abstract. The following is more intuititve.

Man, although sinful, has the power of moving and stopping his arm as he pleases; therefore, according to the different volitions of man, animal spirits are determined to produce or arrest certain kinds of motion in his body, which certainly could not happen according to the general law of the communication of motion. Thus, given that God's will is today still subordinated, if I may so put it, to our own, why would it not have been subordinated to Adam's? If for the good of the body and for civil society God prevents the communication of motion in sinners, why should He not have prevented it on behalf of a righteous man for the good of his soul and to preserve the union and society He had with him, for God made man only for Himself. Since God does not wish to have society with sinners, after sin He stripped from them the power they had of leaving the body, as it were, to join themselves with Him. But He left them the power of arresting or changing the communication of motion in relation to civil society and the preservation of life, because He did not wish to destroy His work, and because even before He had formed it, He had, according to Saint Paul, the intention of restoring it and reforming it in Jesus Christ.

Objection

Against the seventh article.

Men still move their bodies in all directions. At will do they move all its parts whose motion is necessary for the search after goods or for the pursuit of sensible evils. And consequently, they constantly stop or change the natural communication of motion, not only for things of little consequence, but also for things which are useless to life and to civil society, and even for crimes which disrupt society, shorten life and dishonor God in every way. God wills order, I agree, but does order require that the laws of motion be violated for evil and that they should be inviolate for good? Why should man not have the power of arresting the motion produced by sensible objects in his body, since this motion prevents him from doing good, drawing closer to God, and restoring him in his duty, and since he still has the power of doing so much evil in the world by his tongue, his arms, and the other parts of his body whose motions depend on his will?

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[a] In the Elucidation regarding the *nature of ideas* [10], I shall explain in more detail what *Order* is and why God necessarily loves it.

Replies

To reply to this objection, it must be noted that man, after he sinned, ought to have returned to nothingness.[a] For since he was no longer in a state of order and could not return to that state, he ought to have ceased to be. God loves only order; the sinner is not in a state of order; therefore, God does not love the sinner. The sinner cannot subsist, then, since creatures subsist only because God wills that they be and because God does not will that they be unless He loves them. Also, the sinner cannot by himself return to a state of order because he cannot justify himself, and because everything he can possibly suffer cannot equal his offense. He should have returned, then, to nothingness. But since it is not reasonable to think that God should create a work only to annihilate it or to let it fall into a state worse than nothingness, it is clear that God would not have made man nor have permitted his sin (which He had foreseen) unless He had the Incarnation of His Son in view, in whom all things subsist, and by whom the universe receives a beauty, a perfection and a grandeur worthy of the wisdom and power of its Author.

After his sin, man can be considered as without a Redeemer, but in expectation of a Redeemer. If he be considered without a Redeemer, we clearly see him to be incapable of society with God, and to be incapable by himself of the least power to reconcile himself with God. We also clearly see that God must rebuff him, as it were, when he would leave the body to join himself to Him, that is, that man after his sin must lose the power of delivering himself from sensible impressions and from the impulses of concupiscence. He would even have to be annihilated for the reasons I have just given. But he awaits a Redeemer. And if we consider him in expectation of the Redeemer, we see that he must subsist, both him and his posterity of which this Redeemer must be born, and out of which He must form His Church, and that thus man after his sin necessarily still maintains the power of moving in different ways certain parts of the body whose motion might be useful for his preservation.

True, men constantly abuse their power for producing different kinds of motion, and the power they have, for example, of moving their tongue in different ways is the cause of an infinite number of evils. But if you take care you will see that this power is absolutely necessary to maintain society, to console ourselves in the cares of this present life, and for instruction in religion, which engenders hope for the Liberator for whom the world subsists. If you carefully examine what kinds of motion we can produce, you will clearly see that God left us power over our body only to the extent that it is needed to preserve our life and to maintain civil society. The beating of the heart, for example, the expansion of the diaphragm, the peristaltic motion of the viscera, the circulation of spirits and blood, and different kinds of motion of the nerves during the passions, are produced in us without waiting for orders from the soul. Since these things must occur in roughly the same way under the same circumstances, nothing obliges God to place them now under the direction of the will of men. But since the muscular motion that serves to move the tongue, the arms, and the legs must almost constantly change according to the almost infinite diversity of good or evil objects that surround us, this kind of motion had to be dependent upon the will of men.

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[a] See the second and fifth dialogues of the *Conversations chrétiennes*, to which I have already referred.

Now, it should be noted that God always acts by the simplest means, that the laws of nature must be general,[a] and that thus having given us the power of moving our arm and our tongue He cannot strip us of the power of striking a man unjustly or of libeling him. For if our natural faculties depended on our intentions, there would be no uniformity or rigid rule in the laws of nature, which nonetheless must be very simple and general in order to be worthy of the wisdom of God and to conform with order. Consequently, God, as a result of these decrees, prefers to create the *material* of sin, as the theologians put it, or to be a part of men's injustice, as one of the prophets puts it,[b] than to change His volitions in order to bring the disorders of sinners to a halt. But He retains the power of being revenged for the unworthy way in which He is treated when He can do so without going against the immutability of His decrees, that is, when death having corrupted the body of the carnal, God is no longer under the self-imposed necessity of providing them with sensations and thoughts related to it.

First Objection

Against the eleventh and twelfth articles.

Original Sin not only makes man the slave of his body and subject to the impluses of concupiscence, it also fills him with entirely spiritual vices. Before baptism, not only is the child's body corrupt but its soul and all its faculties are also infected by sin. Although the rebellion of the body is the principal vice among several coarse vices such as intemperance and lewdness, it is not the cause of the purely spiritual vices such as pride and envy might be. Thus, Original Sin is something quite different from the concupiscence with which we are born. It seems to be the privation of original righteousness or grace.

Reply

I grant that children are deprived of original justice, and I even give a proof of this when I show that they are not born in a state of righteousness and that God hates them. For it seems to me you cannot give a clearer idea of righteousness and rectitude than by saying that a will is virtuous when it loves God and that it is disordered when it is turned toward bodies. But if by original grace or righteousness you mean certain unknown qualities like those with which God is said to have adorned the soul of the first man in order to make it pleasing in His eyes, it is also clear that the privation of this righteousness is not Original Sin, for strictly speaking, this privation is not transmitted. If children do not have these qualities, it is because God does not give them to them; and if God does not give them to them, it is because they are not worthy of them. It is this unworthiness that, strictly speaking, is Original Sin.

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[a] I have explained providence at greater length in the *Dialogues on Metaphysics*, to which I have already referred.

[b] "Servire me fecistis in peccatis vestris" Isa. 43:24.

Now, this unworthiness, which, as I have already shown, consists in the fact that the inclinations of children are actually corrupt and that their heart is turned toward bodies that they love, is really in them. It is not the imputation of their father's sin; they are actually in a state of disorder. Just as those who are justified through Jesus Christ, of whom Adam was the figure, are not justified through imputation. They are actually restored to order by inner righteousness different from the righteousness of Jesus Christ, although only Jesus Christ has merited it for them.

The soul has only two essential or natural relations, one to God and the other to its body. Now, it is clear that the relation or union it has with God cannot corrupt it or make it vicious; therefore, it is corrupt or vicious at the moment it is created only through the relation it has with its body. Thus, it must be said either that pride and the other vices we call spiritual can be communicated by the body or that children are not subject to them at the moment of their birth. I say at the moment of their birth, for I do not deny that these evil habits are easily acquired. Although the pure intelligences are related only to God, and at the moment of their creation were not subject to any vice, they nevertheless fell into a state of disorder. But this is only because they made ill use of their freedom, while children have made no use of their freedom, for Original Sin is not voluntary.

But basically I believe that those who think that the rebellion of the body is the cause only of the coarse vices, such as intemperance, lewdness, and not of those we call spiritual such as pride and envy, are mistaken in this. I am convinced that there is a correspondence between the dispositions of our brain and of our soul such that there cannot be an evil habit in the soul that does not have its source in the body.

In several places Saint Paul calls law, wisdom, desires, and works of the flesh, whatever is contrary to the law of the spirit. He does not speak of spiritual vices. Among the works of the flesh he places[a] idolatry, heresies, dissensions, and several other vices that we call spiritual. According to his teaching, to follow the impulses of the flesh is to yield to vainglory, anger, and envy. From the way the apostle expresses himself, it seems that all sin comes from the flesh. Not that the flesh commits it or that man's spiritual part without the grace or spirit of Jesus Christ does anything good, but because the flesh acts on man's spiritual part in such a way that all the evil he does is at its urging. This is how Saint Paul speaks in the epistle to the Romans [7:22–23]: ''I rejoice in the law of God according to the inner man; but I see in the members of my body another law that struggles against the law of my spirit, and that makes me a captive under the law of sin that is in the members of my body.'' And further on [7:25] ''Thus I am myself subject to the law of God according to the spirit, and to the law of sin according to the flesh.'' He speaks in the same way in several other places in his epistles. Thus, concupiscence or the rebellion of the body leads not only to the vices we call carnal or disgraceful but also to those we believe to be spiritual. I shall now attempt to prove this in an intuitive way.

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[a] Gal. ch. 5 [v.20].

It seems to me certain that when a person is in a group, traces are mechanically produced in his brain, and motion that generates evil inclinations and thoughts in his soul is excited in his animal spirits. In these cases our thoughts do not naturally conform with the truth, and our inclinations do not conform with order; they are generated in us for the good of the body and of the present life because it is the body that excites them. Thus, they lose for us the presence of God and the thought of our duty, and they tend only to make other men consider us worthy of their affection and esteem. This secret pride that is awakened in us on these occasions is therefore a spiritual vice whose source is the rebellion of the body.

If, for example, the people in our presence are socially important, the brilliance of their grandeur dazzles and deflates us. Since the traces their presence excites in our brain are sometimes very large and their motion very lively, they radiate, as it were, throughout our entire body. They are reflected on our face and perceptibly indicate respect and fear, and all our most hidden feelings. Then, through these perceptible expressions of our inner impulses, these traces act on the person looking at us. They dispose him toward feelings of gentleness and decency through traces that our fearful or respectful attitude mechanically produce in his brain, which, appearing on his face, remove his former augustness and give to the rest of his body a stance that then calms our uneasiness and reassures us. Thus, after several exchanges of perceptible expressions, our attitude finally stabilizes in a state agreeable to the person dominating us.

Now, since every instance of motion in the animal spirits is accompanied by an impulse of the soul, and since traces in the brain are followed by thoughts in the mind, it is clear that as we are now deprived of the power of removing these traces and arresting this motion, we find ourselves moved by the presence of someone who dominates us, to take part in his desires and feelings, and to devote all our attention to him, just as he is led to devote his attention to us, although in a different way. For this reason, worldly conversation awakens and strengthens the concupiscence of pride, as underhanded dealings, good living, and the enjoyment of sensual pleasures increase carnal concupiscence, which is something that must be taken note of in morals.

It is a very useful thing for there to be in the brain traces that constantly represent man to himself so that he will take care of himself, and for there to be others that serve to form and maintain society, because men are not made to live alone. But since man has lost the power of eliminating these traces at will when they ought to be removed, they constantly urge him toward evil. Since he cannot avoid being represented to himself, he is unceasingly urged to impulses of pride and vanity, to scorn others, and to make himself the center of all things. And since he is not the master of the traces that urge him to maintain society with others, he is urged almost in spite of himself by impulses of complaisance, flattery, jealousy, and similar inclinations. Thus, all the vices we call spiritual come as much from the flesh as do lewdness and intemperance.

Not only are there dispositions in our brain that excite sensations and impulses in us in relation to the propagation of the species and the preservation of life, but there are perhaps also a great number of dispositions that awaken thoughts and passions in us in relation to society, our particular concerns as well as the concerns of our friends. We are joined by nature to all the bodies surrounding us and through these bodies to everything that is in some way related to us. Now we can be joined to them only through certain dispositions that are in our brain. Thus, since we do not have the power of preventing the operation of these natural dispositions, our union reverses its order of dependence, and we become subject through our body to all kinds of vices.

We are not pure intelligences. All the dispositions of our soul produce certain dispositions in our body, as the dispositions of our body excite similar dispositions in our soul. It is not that the soul can receive absolutely nothing except through the body, but that it is so united to the body that it cannot receive any change in its modifications without the body also receiving some change. True, it can be enlightened or receive new ideas without the body necessarily playing some role; but this is because pure ideas are not modifications of the soul, as I have proved elsewhere. Here I am only speaking about sensible ideas, for these ideas involve a sensation, and every sensation is a mode that moves and concerns the soul.

Second Objection

Against the eleventh and twelfth articles.

If Original Sin is transmitted because of the communication found between the brain of the mother and that of her child, it is the mother who is the cause of this sin and the father has nothing to do with it. Yet Saint Paul teaches us that it is through man that sin has entered into the world.[a] He does not speak only about woman. Therefore, etc.

Reply

David asserts that his mother *conceived him in iniquity*, and Ecclesiasticus says that *sin comes from woman and that it is through her that we are all subject to death*.[b] Neither one says anything at all about man. Saint Paul, on the contrary, says that it is through man that sin has entered into the world, and says nothing at all about women. How are these testimonies to be reconciled, and is man or woman to be justified if either one or the other is to be justified? In speech we never attribute to woman something in which she plays no role and which belongs to man only. But we often attribute to man something that belongs to woman, because the husband is her lord and master. We see that the evangelists and even the Blessed Virgin called Saint Joseph the father of Jesus when she said to her son, Behold your father and myself who have been looking for you: "Ecce pater tuus & ego dolentes quaerebamus te."[a] Thus, since Sacred Scripture assures us that it is through woman that we are all subject to death and to sin, it is absolutely necessary to believe it; this cannot be blamed on man alone. But although it assures us in other places that it is through man that sin has entered into the world, the necessity to believe this is not entirely similar, because what belongs to woman can be attributed to man. And if we were obliged through faith to excuse either man or woman, it would be more reasonable to excuse man.

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[a] "Sicut per unum hominem peccatum in hunc mundum intravit," & c. Rom. 5 [v.12].

[b] "In iniquitatibus conceptus sum & in peccatis concepit me mater mea." <Ps. 51:5—corrected.> "A muliere initium factus est peccati, & per illam omnes morimur." Ecclus. 25:23.

Yet I feel that a strict interpretation must be given of the passages I have just cited and that both man and woman must be said to be real causes of sin, each in their own way; woman in that through her sin is communicated (since through her man begets children), and man because his sin is the cause of concupiscence (since his action is the cause of the woman's fecundity, or of the communication between the woman and her child).

It is certain that man makes woman fecund, and, consequently, he is the cause of the communication found between the mother's body and that of her child, because this communication is the source of life for children. Now, this communication not only gives the dispositions of the mother's body to the bodies of her children, it also gives the dispositions of her mind to their mind. We can say then, as does Saint Paul, that *through man sin has entered into the world;* but nonetheless because of this communication it must also be said that *sin comes from woman*, that *through her we are subject to death*, and that *our mother has conceived us in iniquity*, as it is put in other places in Scripture.

You will perhaps say that even if man had not sinned, woman would have had sinful children. For having sinned herself, she would have lost the power God had given her over her body; and thus, although man should have remained righteous, she would have corrupted the brain and consequently the mind of her child because of the communication she had with it.

Certainly, this does not seem likely, for the righteous man could not knowingly give to a woman the wretched fecundity of begetting sinful children. Had he remained righteous, he would have willed to have children only for God, and sinful children can never be pleasing to God (nothing is supposed here about a mediator). I grant, nonetheless, that in this case the marriage was not broken off and that the man approached the woman. But it is certain that the body of the woman belonged to her husband. Her body had been drawn from his. There was but one flesh: "Duo in carne una" [Gen. 2:24]. It is also certain that the children belonged as much to the father as to the mother. This being so, I cannot be persuaded that the woman after her sin should have lost the power she had over her body unless her husband had also sinned. For if the woman had been deprived of this power while the husband remained in a state of innocence, there would have been this disorder in the universe, that a righteous man would have had a corrupt body and sinful children. Now, it is against order, or, rather, it is a contradiction, that a righteous God should punish man when he is in a state of perfect innocence. For this reason, Eve felt no involuntary or rebellious impulses immediately after her sin. She did not yet feel shame in being seen naked, she did not conceal herself. Rather, she drew near her husband, although he was naked like her. Her eyes were not yet opened; she was, as before, the absolute mistress of her body. Order had it that immediately after her sin her soul was troubled by the rebellion of her body and by the shame of her and her husband's nakedness; for it was not just that God should any longer suspend the laws of the communication of motion in her favor, as I have said in the seventh article. But because her body belonged to her husband, and because her husband was still in a state of innocence, she received no punishment through this body. This punishment was deferred until he himself had eaten of the fruit she gave him. It was then that they both felt the rebellion of their bodies and saw that they were naked, and it was then that shame forced them to cover themselves with fig leaves.[a] Thus, Adam must be said to be the real cause of Original Sin and of concupiscence, because his sin deprived his wife as well as himself of the power they had over their body; and for lack of this power, woman must be said to produce traces in the brain of her child that corrupt the soul as soon as it is created. Nevertheless, according to Saint Augustine, it amounts to the same thing as to whether man or woman introduced sin into the world: "Sive autem a muliere, sive ab Adam dicatur, initium factum esse peccati & per illam omnes mori, utrumque ad primum hominem pertinet: quoniam, sicut novimus; mulier ex viro est, & utriusque caro una est."[b]

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[a] Luke 2:48.

First Objection

Against the twelfth article.

It is guessing to say that the communication between the mother's brain and that of her child is necessary or useful for the formation of the foetus, for there is no communication between the brain of a hen and that of its chicks, and yet the chicks are formed perfectly well.

Reply

My reply is that in the seventh chapter of the second book I have given a sufficient demonstration of this communication through the use I make of it to explain the generation of monsters and certain natural fears and marks. For it is clear that a man who falls into a swoon at the sight of a snake because his mother had been frightened by a snake while she was carrying him in her womb can have this weakness only because traces like those that are opened up when he sees a snake were formed in his brain at an earlier time, and because these traces were accompanied by a similar accident. Thus, I am not making any guesses about this because I do not venture to give any precise indication of the nature of this communication. I even believe that the means by which this occurs will always elude the skills of the cleverest anatomists. I might say that it happens through the roots that the foetus grows into the womb of the mother and through the nerves with which this part of the mother seems to be replete. And in doing so, I would be guessing no more than a man who, never having seen the machines of the Samaritan pump, would assert that there are wheels and pumps for raising the water. Yet I believe that guessing is sometimes permitted provided that one would not pass oneself off as a prophet or speak with too much assurance. I believe that one is permitted to say what one thinks provided that one does not claim infallibility or impose upon minds with authoritarian methods or with scientific terms that impress inattentive readers. It is not always guessing to say things that are not visible and that are contrary to prejudice, provided that what is said is well conceived and enters readily into the mind of those who wish to listen to reason.

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[a] Gen. ch. 3 [vv.6–11].

[b] Aug. *De pecc. mer. & rem.*

I say, then, that by assuming the general laws of the communication of motion such as they are, it is likely that the particular communication between the mother's brain and that of her child is necessary so that the child's body might be formed as it should, or at least that it is necessary so that the child's brain might receive certain dispositions that should change according to the time and place, as I explained in the same chapter.

I grant that there is no communication between the brain of a hen and that of a chick, which is formed in an egg, and that yet the body of chicks is formed perfectly well. But it should be noted that the chick is further advanced in the egg when the hen lays it, than is the foetus when it descends in the uterus. This must be concluded because less time is required to hatch eggs than is required to give birth to puppies, although given that the womb of a bitch is very warm and her blood always in motion, the puppies would have to be formed sooner than the eggs are hatched if the chicks were not more advanced in their eggs than the puppies in their seeds. Now, it is very likely that this very advanced formation of the chicken in its egg before being laid has been produced or governed by the communication I am talking about.

I reply, secondly, that growth in the body of birds perhaps conforms more to the general law of motion than that of quadruped animals, and that thus the communication between the mother's brain and that of her little ones is not so necessary in birds as in other animals. For this communication is necessary, it would seem, to correct a lack in the general laws, which in certain particular cases are not sufficient for the formation or growth of animals.

Finally, I reply that the preservation of the life of birds does not require as many particular dispositions in their brain as in other animals'. They have wings to flee evil and to catch their prey. They do not need all those particular mechanisms that are the source of the adeptness and docility of certain domestic animals. Thus, their mother need not train them in many things while forming them, or make them capable of being trained by a disposition of the brain toward docility. Those who train young dogs for hunting sometimes find dogs that stop naturally solely because of the training they have received from their mother, who has often hunted while pregnant. We almost always note some difference among the traces of these animals, and that there are some who are more obedient and capable of better training than others of the same species. But I do not think there has ever been a bird that has taught anything so extraordinary to its young, and that a hen, for example, has ever produced a chick that could do anything other than what they all do naturally. Birds, then, are not as docile or as capable of training as other animals. The disposition of their brain is not ordinarily susceptible to many changes. They do not act through imitation as much as certain domestic animals. Ducklings led by a hen do not wait for her example to plunge into water, whereas chicks, on the contrary, do not become accustomed to swimming although the mother duck that hatched them and leads them around might swim constantly. But there are animals that readily imitate the unusual movements they see others performing. Yet I do not claim that you must pause a great deal over these last reflections; they are not necessary to establish what I claim.

Second Objection

Against the twelfth article.

It is also guessing to assert that before her sin the mother could have had communication with her fruit, for there is no necessary relation between our thoughts and the motion taking place in our brain. Thus, this communication from the brain of the mother to the brain of the child is useless.

Reply

It is clear that without this communication no exchange at all would be possible between mother and child without a particular miracle. Now, before sin, order had it that the mother was advised of all the corporeal needs of her child, and the child was not ignorant of its obligations to its parents. Therefore, since everything had been in order before sin, and since God always acts in conformity with order, the mother and child communicated by the means described above.

In order to understand what might have been the nature of this exchange, it must be remembered that the connection between traces in the brain and the soul's ideas can occur in several ways, either according to nature or according to the will of men, or in some other way, as I have already explained in the second book.[a]

When we look at a square or someone suffering pain, we have in our mind the idea of a square or of a person in distress. This is general to all nations, and the connection between the ideas and traces is natural. When a Frenchman reads the word *quarré* or hears it pronounced, he too has the idea of a square; but the connection between the sound or the letters of this word and his idea is not natural, is not as general to all men. I say, then, that the mother and the child would have naturally had communication between them concerning everything that can be represented to the mind by natural connections; that if the mother, for example, had seen a square, the child, too, would have seen it; and that if the child had imagined some figure, it would also have awakened the trace of the same figure in its mother's imagination. But the mother and child would not naturally have had communication between them about purely spiritual things, or even about corporeal things if they had conceived them without making use of their imagination or senses. The mother would have thought about God, or have heard or read the word *quarré*, or some other similar word, without the child being able to discover what thought she had, unless with time she had been able to establish with it a new exchange of intellectual ideas roughly as nurses do when they teach children to speak. I shall now explain and prove all this.

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[a] Ch. 5 of pt. 1.

It seems to me that through the explanation I have given of the cause of hereditary aversions and of birthmarks, I have sufficiently proved that mothers' traces are communicated to their children. Now, the traces of corporeal things are inseparable from their ideas; therefore, these ideas are also communicated, and children see, feel, and imagine the same things as their mothers. In spite of themselves, they now sense what their mothers sense; but if they had not been sinners, they would have had the power of avoiding at will the effect of the communication they have with their mothers. For the same reason that we imagine whatever we want when our sensations are not too lively, they would even have been able to arouse traces in their brain that they had not received from them. On this supposition it is clear that when the mother was conscious of her child she was able to discover, by a kind of after-effect, whether or not it received the impression she excited in it, and even the other things it was thinking about. For just as the mother could not set the fibers of her brain in motion without the fibers of the child's thereby receiving an impression, so the child could not stop this motion or excite some other kind of motion without the mother realizing, through some mild impression, that it was doing so, provided that she paid strict attention to it through the power she had of stopping every disturbance other than the one that her child was exciting in her. Thus, it must be agreed that the mother and child had a certain communication before sin, or else the connection from the brain of the one to the brain of the other, or the soul's power over the body, as I have previously established it, must be denied. This seems clear enough, although the imagination might boggle at it and prejudice might be opposed to it. It is true that this communication would have at first been only for things falling under the senses and the imagination, and that since children are connected to their mother only through the body, it is not absolutely necessary that through her they receive ideas other than those of sensible objects. For, since their soul is closely tied to God, if we consider them without sin, they immediately receive from Him all ideas not related to the body. But as we are able with time to attach the most abstract ideas to sensible objects in no way related to them, the communication of mothers with their children apparently was soon extended to the most spiritual things, if they tried to communicate with them about such matters.

I realize that what I say here will not seem very reasonable to most men and that even those who struggle against prejudice and the constant effort of sensible impressions will be surprised by the novelty of these thoughts. But if you carefully consider the way in which a teacher instructs his pupil, if you consider how many different means he is obliged to make use of in order to show him the ideas he has of things, the comparisons he makes between them, the ways in which he judges them, and the other dispositions of his mind with regard to them, you will see that, but for sin, mothers would have had much less difficulty in revealing their thoughts and inner dispositions to their children than teachers do to their pupils, on the single assumption that the traces in the brain of mothers be stamped in the brain of their children, which seems to me to be evident enough from what I have just said. For in the final analysis, it can be seen that words and all external signs we make use of to express our thoughts to other men have the effect we wish only because they impress in the brain of those listening to us the same traces and excite the same agitation of spirits as accompany our ideas and our inner disposition with regard to them.

Objection

Against the seventeenth article and those following it.

It is rash to say that children are justified in baptism by the actual impulses of their will toward God. There is no room here for novel views; they only amount to a lot of noise.

Reply

I agree that it should not be stated positively that children are justified through formal acts of their will. I believe that we do not know anything about this and that positive assertions should be made only about what we know. I even believe that the habit of their charity was not preceded by any act of love of God. But as there are only too many people who are inclined to believe that the justification of children is only exterior and through *imputation* because, as they say, they are incapable of forming any act of love of God, I feel that it is appropriate to show them that this opinion of theirs is mere prejudice. For men's prejudices with regard to children are such that they ordinarily imagine that they do not think while in their mother's womb or during their first years, and even that they are absolutely incapable of doing so. They believe that they do not yet have even the ideas of things in them, that it is their teachers, rather, who inspire ideas in them during conversation, and that if they have certain inclinations, they are not of the same nature as our own and that they cannot lead them to the sovereign good. Most men do not distinctly understand that the soul of children is like the soul of older people, that it does not become stronger or more perfect as does the body. And that if it were delivered for a moment from the impression the body makes on it and were moved by the delight of grace, it would at that moment be purer and more enlightened than the souls of the greatest saints, who always experience in their mind and heart some effects of concupiscence.

Concupiscence is commonly regarded as if it were natural, and it is not always thought to be a consequence of sin. Thus, we judge unreflectingly that the stupidity of children is a necessary consequence of the weakness of their bodies, of their tender years, and even of the incapacity of their mind. Now, this judgment or prejudice is constantly represented to the mind, and it preoccupies it in such a way as to prevent it from examining the thing in itself. Thus, those who in past centuries spoke about the effect of baptism did not explain the regeneration of children through the actual impulses of their heart, not because they based their judgments on solid reasons that this was not possible (for it seems from their works that they did not even examine it), but because (as seems rather clear) they supposed it so and hardly thought about doubting it, or perhaps because they had no desire to give an explanation that would upset prejudice at a time when not as much effort was being made to eliminate it as now.

But if you see that it is necessary to give a more precise explanation than is given, for example, by Saint Augustine in some places (which supports[a] *imputation*, although he elsewhere speaks in a way that does not support[b] it); if you consider that *imputation* is convenient and that for this reason it seems to have been accepted by certain ancient and very orthodox theologians,[c] and that it is absolutely necessary to those who deny, although unjustifiably, habits in the soul (and who at the same time deny that children are capable of actual love)—whom it is perhaps good to satisfy if we can; finally, if you wish to respect the natural fairness that prohibits condemning secret intentions, you will perhaps be able to judge that what I say is not likely. But I do not think that you can complain of what I say in my attempt to satisfy even the most querulous minds concerning their difficulties about the transmission and remission of Original Sin, because the necessity of a Mediator and all religion presuppose the corruption of our nature by this sin.

[a] Bk. 1 *De nupt.* ch. 25–26, 27; *In Jul.* 1.6 c.19 and elsewhere.

[b] Ep. 21.1. *De peccatorum meritis*, c. 19 & *alibi*.

[c] Innocent III in 3. *Decret. de baptismo & ejus effectu. Capite majores.* Et in conc. Viennensi: Generali 15. under Clement V.

ELUCIDATION NINE

On the third chapter of the third part of the second book, in which I speak about the force of imagination of authors, especially Tertullian.

As I am convinced that the most general and most fruitful source of the errors to be found in the sciences, and especially in morals, is the impression lively imaginations make on the mind of men, who are machine- rather than reason-directed, I thought I should illustrate this truth in all the ways that might awaken minds from their somnolence with respect to it. And because examples strongly impress us, especially when they involve something great and extraordinary, I thought that the illustrious names of Tertullian, Seneca, and Montaigne might excite the attention of readers and sensibly convince them of this contagious domination of the imagination over reason. For after all, if completely dead words not animated by the bearing and sensible manner of these famous authors are still stronger than the reason of certain people, if the turn of expression that gives only a faint idea of the sensible action that the imagination spreads vividly across the face and the rest of the body of those penetrated by what they say, can agitate, penetrate, and convince an infinity of people, then certainly we must agree that nothing is more dangerous than to listen respectfully to those of a strong and lively imagination. For their bearing and manner is so strong and convincing a natural language, and they know how to imbue everything with such passion, that they almost always rouse the senses and the passions against reason, and pour, so to speak, conviction and certitude into those looking at them.

I had foreseen while adducing these great examples that I would not cure those struck with wonder and admiration on reading these three famous authors. Man need not be known very well in order to know that wounds received by the brain heal with greater difficulty than those in other parts of the body, and that it is easier to heal a wound not exposed to the action of a body that might reopen it than to perfectly cure certain prejudices that are constantly justifying themselves through reasons that seem the more probable as they are more sensible.

It is very difficult to close brain traces tightly because they are exposed to the flow of spirits and can be constantly reopened by an infinity of traces that might be called ancillary. These sorts of wounds can ordinarily be healed or closed only when the brain having received other, deeper and contrary traces, a strong and continual revulsion occurs in the spirits. For it must not be imagined that a prejudice is entirely cured as soon as we imagine it is because we are not actually struck by it. A prejudice is entirely cured only when the trace has been tightly sealed, and not when the spirits begin to cease their flow for some particular reason.

I therefore realized that those who had been conquered and laid low by the force and impulse of Tertullian, carried away and dazzled by the grandeur and the beauties of Seneca, won over and corrupted by the free and natural ways of Montaigne would not change their opinion after reading a few pages of my book. I judged to the contrary that they would be distressed at my trying to dispel their enchantment.

But as I hoped these examples would be useful to my purpose for the reasons I have just given, I thought I should be concerned more with the advantage of certain people who are without prejudice than with the distress of certain individuals I thought would criticize the liberty I had taken. I considered that there are few people with such a biased esteem for these authors that there is no longer any hope for their return to reason. I judged, finally, that as there is perhaps no one biased with respect to all three together because of the diversity of the character of their imaginations, even the most opinionated would find that I am right about many things.

I know the respect I should have for the works of Tertullian—as much because of the subjects he treats as because of the approbation they have had from several people who should know how to judge them. And I have made this disposition of my mind sufficiently known by the things I have said about them, and by the quality of the book *De Pallio*, of which alone I have spoken freely, although there were perhaps others better suited to my purpose.

But after all, I do not think time should change or magnify ideas of things, that all antiquities are venerable, and that false reasons and extravagent ways are worthy of respect because they were in the world long before us. I do not think that we should receive preposterous obscurities as sacred mysteries, bursts of imagination as brilliant lights, the heat of Africa acting in a naturally ardent mind as the impulses of a prophetic spirit able to pronounce only sublime truths.

I realize that even those who most respect the works of Tertullian agree with all this and that they are too fairminded to support the disorders of the imagination against Reason. But perhaps they are like those judicious people who greatly love truth but who nonetheless are not insensible to manners. For I have often seen some of them so enthralled with certain powerful, vivid, grand, and magnificent expressions of Tertullian, that after it was proved to them that this author was not very judicious or reasonable, all they did was to repeat them to me as if to surprise me and win me over.

I admit that Tertullian has some extremely strong and bold expressions, and that they produce very vivid and lively images in the mind, and it is just because of this that I give him as an example that strong imaginations have a great deal of power to agitate and convince by impression. Thus, those who make these sorts of objection against me confirm my view as they combat it. The bias and the esteem they have for Tertullian justify my procedure. The frequent citations and big words they quote from him prove what I say. For complete arguments from this author are almost never cited; but strong and lively expressions from him are often cited in order to dazzle, move, and convince through sensible impression.

It seems to me you should not imagine that I wish to set myself up as a censor of so many great men who constantly cite Tertullian in the pulpit and elsewhere. They have their reasons, the examination of which I do not and must not enter. It seems to me that what I say about this author is clear. Let everyone draw his conclusions according to his lights, without attributing to me thoughts I do not have. Those who wish to penetrate the aims of others often form ghosts resembling only themselves, for we are wont to spread, as it were, the maliciousness of our passions over others. We judge everything in relation to ourselves, and those who condemn me, although they do not realize it, perhaps judge themselves. But if you wish me to declare myself on quotations from Tertullian, I agree that, for several reasons, it is right to use them and even that they are sometimes very useful in illustrating certain practical truths that are sterile and unfruitful as long as they are in the secret recesses of reason and do not give us impulses contrary to those the goods of the body excite in us.

Nonetheless, I do not find very unreasonable the opinion of those who believe authors should be cited by name only when they are infallible and that except in things where reason has no part, or in which authority must take precedence, no one should be cited. This used to be the practice of the Fathers. Saint Cyprian never cited Tertullian, although he took many things from him. And if what Saint Jerome relates by hearsay of this holy bishop is true, that speaking of Tertullian he called him his master, the name of Tertullian must not have had much authority, nor his expressions the force they now have over minds, or else Saint Cyprian must have followed the practice of his age with surprising rigor. For it is a strange thing that such a disciple did not speak of his master in any of his works.

This story of Saint Jerome is commonly used in defense of Tertullian, and I am sometimes told that I was wrong to speak as I did of a man Saint Cyprian called his master. But I do not know whether Saint Jerome was not too quick to attest to what honored Tertullian. It seems he was a bit too favorable toward him, because he to some extent excused his fall by blaming his heresy on the envy the clergy of Rome bore him and on the ill treatment he received from them.[a] But if this story, which is based only on what Saint Jerome heard from a single person, is true, I admit that I do not understand the silence Saint Cyprian observes in his writings with respect to Tertullian. This silence of the disciple manifestly hides some mystery that is not in the interest of the master. And if the story as well as Tertullian's own works did not sufficiently show that he is not entirely worthy of the high esteem many people have for him, I do not know whether the conduct of Saint Cyprian, his silence, his style, his procedures would not suffice to diminish it and to make us think that perhaps the reputation of this author was not too well established, even in Africa, which ought to have been more favorable to him than a country as temperate as ours.

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[a] "Invidia postea, & contumeliis Clericorum Romanae Ecclesiae, ad Montani dogma delapsus, in multis libris novae prophetiae meminit." Hieron. in *Catalogo de script. Eccl.* [ch. 53.]

France and Africa produce very different minds. The genius of the French being natural, reasonable, inimical to exaggeration, it is strange that among them there are those impassioned for an author who does not study or follow nature, and who, instead of consulting reason, lets himself be carried away by passion into altogether obscure, monstrous, and ridiculous expressions.

But this is perhaps because the imagination is so strong that it weakens reason and even changes nature. Indeed, an impassioned man disturbs us and almost always changes the natural state of our imagination in order to conform it to his own. And there is then no impulse that does not seem natural, no expression that is not pleasant, no gibberish that is not convincing; for we do not examine them carefully. Now, since the passions justify themselves, and since disordered imaginings are pleasing only in their disorder, we cannot judge soundly of things as long as the brain preserves the violent impression it has received. There is not an impassioned man who is not concerned to justify the passion animating him; there is not a disturbed man who does not take pleasure in his disturbance. For if those who imagine they have become cocks, wolves, and oxen take extreme pleasure in the actions these animals customarily perform, although they are completely contrary to the nature of man, it can easily be judged that we are far from condemning the behavior of those who through the contagion of their imagination have made us to some extent like them; for in condemning them we realize that we would condemn ourselves.

There is a special reason why certain of the learned pride themselves in being followers of Tertullian and express an extraordinary respect for this author. It is the obscurity he affects as one of the principal rules of his rhetoric.

We nowadays call gibberish all expressions devoid of sense and all confused and obscure ways of speaking; but there were people who[a] regarded obscurity as one of the greatest secrets of eloquence, and among whom the art of persuasion in part consisted of making oneself unintelligible.

If those who speak in public always had clear and distinct ideas of the truths they would persuade us of, and if they spoke only to people capable of enough attention to understand them, the precept of affecting obscurity in discourse would be ridiculous in every respect. But though this precept is absolutely contrary to reason, it might be said to be sufficiently tailored to the mentality of most men, not only because it hides the ignorance of those speaking, but also because mysterious obscurity excites in many people sensations that dispose them to yield and to let themselves be convinced.

Experience sufficiently shows that most men esteem what they do not understand, that they revere as mysteries everything that surpasses them, and that

[a] See Quintilian *Inst. orat.* 1. 8. C. 2.

they feel an orator has performed wonders when he has dazzled them with a brilliant display and a language of the imagination in which reason has no part.

The inclination men have for grandeur is greater than that which they have for truth. Thus, the pompous gibberish that persuades through impression is better received than pure reasoning, which can persuade only through its evidence. Evidence is acquired only by reflection costing some labor to those making it, but sensible conviction spreads out in the soul and penetrates it in a very pleasant way.

The good that alone can satisfy us is at once both infinite and inaccessible, and grand and obscure expressions bear its mark. As a result, since obscurity excites our desires as grandeur excites our wonder and esteem, these expressions win us over by the impulses they produce in us.

When we know, or think we know, a difficult and obscure author, we esteem ourselves more than those who do not know him; and we sometimes regard them as ignorant. The labor spent in understanding him biases us in his defense. We justify our studies when we revere him and make others revere him. And as we find pleasure in justifying ourselves, we must not fail to praise him and to defend him eagerly in a lively and sensible way.

These reasons, and others less strong, suffice, it would seem, to illustrate that the obscurity of Tertullian is not detrimental to him in the mind of some people, and that they clearly would not have had as much admiration for him if the truths scattered through his works were reduced to their simplest and clearest terms.

We always reduce mathematical truths and ratios to their *exponents*, i.e., the simplest terms expressing them, and we free them from everything that might confuse and obscure them, for geometers love the pure truth; they do not wish to convince by impression, but by evidence and light. What would become of many of Tertullian's thoughts if we reduced them to their exponents according to the rules of the geometer logicians, and if we had thus stripped them of the sensible ostentation that dazzles reason? We should perform this experiment if we wish to judge solidly the reasoning of this author.

Nonetheless, I do not claim that Tertullian should have written as a geometer. Figures expressing our sensations and impulses with regard to the truths we expose to others are absolutely necessary. And I believe that especially in discourse about religion and morality we must use adornments that might procure for the truth all the respect due it and impulses that might move the soul and lead it to virtuous action. But we must not adorn a phantom without body or reality; we must not excite useless impulses. And if we wish to effectually impress conviction and certitude in those listening to us, this conviction must relate to something true and solid. We must not convince someone nor let ourselves be convinced without knowing clearly, distinctly, and precisely what we are convincing or being convinced of. We must know what we say, we must know what we believe. We must love only truth and light, and must not strike others with blindness after having let ourselves be struck with it.

ELUCIDATION TEN

On the nature of ideas, in which I explain how all things, eternal laws, and truths, are seen in God.

I hoped that what I said about the nature of ideas would have been enough to show that it is God who enlightens us, but experience has taught me that there are many people who are incapable of sufficiently close attention to understand the arguments that I have given for this principle. What is abstract is incomprehensible to most men. Only what is sensible awakens them, and fixes and sustains their mind's perception. They cannot consider and hence cannot understand what does not come under the senses or the imagination. This is something that I have said often, but that bears repetition.

It is evident that bodies are not visible by themselves and that they cannot act on our mind or represent themselves to it. This needs no proof—it can be seen through simple perception with no need of reasoning, for the slightest attention of the mind to the clear idea of matter suffices to show it. This is infinitely more certain than that bodies communicate their motion when they collide; but it is certain only to those who silence their senses in order to listen to their reason. Thus, everyone believes, though utterly without foundation, that bodies can move one another, because the senses say so; but no one believes that bodies are by themselves entirely invisible and incapable of acting on the mind, because the senses do not say so and seem to say the contrary.

Nonetheless, there are some people whose firm and steadfast reason rises to the most abstract of truths; they meditate attentively and they courageously resist the impression of their senses and imagination. But the body gradually weighs down the mind, and they fall back. These ideas vanish, and as the imagination stirs up livelier and more sensible ideas, the ideas of abstract truths then seem to be only wraiths exciting fear and mistrust.

We are easily led to mistrust people or things with which we are unfamiliar, or which do not afford us some sensible pleasure, for it is pleasure that wins the heart and familiarity that calms the uncertain mind. Thus, those who are unaccustomed to abstract or metaphysical truths are easily persuaded that we are trying only to lead them astray when we would enlighten them. With mistrust and with a kind of loathing do they look at non-pleasant, non-sensible ideas, and the love they have for repose and felicity soon delivers them from this troubling perception that seems incapable of satisfying them.

If the question before us were not of the greatest importance, the reasons I have just given (as well as certain others I need not relate) would preclude further discussion—for I can see that whatever I might say on this topic will never penetrate the minds of certain people. But it seems to me that the principle that only God enlightens us, and that He enlightens us only through the manifestation of an immutable and necessary wisdom or reason so conforms to religion, and furthermore, that this principle is so absolutely necessary if a sound and unshakable foundation is to be given to any truth whatsoever, that I feel myself under an indispensible obligation to explain and defend it as much as I possibly can. I prefer to be called a visionary, or one of the Illuminati, or any of the lovely things with which the imagination (always sarcastic in insignificant minds) usually answers arguments it does not understand and against which it is defenseless, than to agree that bodies can enlighten me, that I am my own master, reason, and light, and that in order to be well-versed in anything I need only consult myself or other men who can perhaps fill my ears with noise, but who certainly cannot fill my mind with light. Here, then, are several more arguments for the view I proposed in the chapters on which I am now writing.

No one disagrees that all men can know the truth, and even the least enlightened of philosophers agree that man participates in a certain *Reason* that they do not determine. This is why they define man as *animal* RATIONIS *particeps*; for everyone knows, at least in confused fashion, that man's essential difference consists in the necessary union he has with universal Reason (although it is not generally known who it is who contains this Reason, and little effort is made to find out).[a] I see, for example, that twice two is four, and that my friend is to be valued more than my dog; and I am certain that no one in the world does not see this as well as I. Now, I do not see these truths in the mind of other people, just as other people do not see them in mine. There must, therefore, be a universal Reason that enlightens me and all other intelligences. For if the reason I consult were not the same that answers the Chinese, it is clear that I could not be as certain as I am that the Chinese see the same truths as I do. Thus, the Reason we consult when we withdraw into ourselves is a universal Reason. I say, when we withdraw into ourselves, because I am not here talking about the reason followed by a man in passion. When a man values the life of his horse more than the life of his coachman, he has his reasons for doing so; but they are particular reasons that every reasonable man abhors. They are reasons that at bottom are unreasonable, because they do not conform with Sovereign Reason, or the Universal Reason that all men consult.

I am certain that the ideas of things are immutable,[b] and that eternal laws and truths are necessary—it is impossible that they should not be as they are. Now, I see nothing in me of a necessary or immutable nature—I am able not to be, or not to be such as I am; there might be minds unlike me, yet I am certain that there can be no mind that sees truths and laws different from those I see—for every mind necessarily sees that twice two is four, and that one's friend is to be valued more than one's dog. It must be concluded, then, that the reason consulted by all minds is an immutable and necessary Reason.

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[a] "Si ambo videmus verum esse quod dicis, & ambo videmus verum esse quod dico, ubi quaeso id videmus? Nec ego utique in te, nec tu in me, sed ambo in ipsa quae supra mentes nostras est incommutabili veritate." *Conf.* of St. Aug. bk. 12. ch. 25.

[b] See Aug. *De libero arbitrio.* bk. 2. ch. 8 ff.

Furthermore, it is evident that this Reason is infinite. The mind of man clearly conceives that there are, or can be, infinite numbers of intelligible triangles, tetragons, pentagons, and other such figures. Not only does it conceive that it will never lack for ideas of figures, and that it will always discover new ones, even if it were to attend only to these kinds of ideas for all eternity; it even perceives infinity in extension, for the mind cannot doubt that its idea of space is inexhaustible. The mind clearly sees that the number which when multiplied by itself produces 5, or any of the numbers between 4 and 9, 9 and 16, 16 and 25, and so on, is a magnitude, a proportion, a fraction whose terms have more numbers than could stretch from one of the earth's poles to the other. The mind sees clearly that this proportion is such that only God could comprehend it, and that it cannot be expressed exactly, because to do so, a fraction both of whose terms were infinite would be required. I could relate many such examples demonstrating not only that the mind of man is limited but also that the Reason he consults is infinite. For, in short, the mind clearly sees the infinite in this Sovereign Reason, although he does not comprehend it. In a word, the Reason man consults must be infinite because it cannot be exhausted, and because it always has an answer for whatever is asked of it.

But if it is true that the Reason in which all men participate is universal, that it is infinite, that it is necessary and immutable, then it is certainly not different from God's own reason, for only the infinite and universal being contains in itself an infinite and universal reason. All creatures are particular beings; universal reason, therefore, is not created. No creature is infinite; infinite reason, therefore, is not a creature. But the reason we consult is not only infinite and universal, it is also independent and necessary, and in one sense, we conceive it as more independent than God Himself. For God can act only according to this reason; He depends on it in a sense—He has to consult and follow it. Now, God consults only Himself and depends on nothing. This reason, therefore, is not different from Himself.; it is, therefore, coeternal and consubstantial with Him. We see clearly that God cannot punish innocence, that He cannot subject minds to bodies, that He is constrained to observe order. We see, then, the rule, the order, the reason of God—for what wisdom other than God's could we see when we dare to say that God is constrained to follow it?

But, after all, is any wisdom other than God's conceiveable? Does Solomon, who describes it so well, distinguish two kinds of wisdom? Does he not teach us that the wisdom that is coeternal with God Himself and by which He established the order we see in His works is the same wisdom that presides over all minds and is consulted in the legislation of just and reasonable laws. One need only read the eighth chapter of Proverbs to be convinced of this truth. I know that Sacred Scripture speaks of a certain wisdom it calls the wisdom of the age, the wisdom of men. But this is because it speaks of things according to appearance, or in a popular vein, for elsewhere it teaches us that this wisdom is but folly and abomination, not only before God, but before all men who consult Reason.

Surely, if eternal laws and truths depended on God, if they had been established by a free volition of the Creator, in short, if the Reason we consult were not necessary and independent, it seems evident to me that there would no longer be any true science and that we might be mistaken in claiming that the arithmetic or geometry of the Chinese is like our own. For in the final analysis, if it were not absolutely necessary that twice four be eight, or that the three angles of a triangle be equal to two right angles, what assurance would we have that these kinds of truths are not like those that are found only in certain universities, or that last only for a certain time? Do we clearly conceive that God cannot stop willing what He has willed with an entirely free and indifferent will? Or rather, do we clearly see that God could not have willed certain things, for a certain time, for a certain place, for certain people, or for certain kinds of beings—given, as some would have it, that He was entirely free and indifferent in His willing? As for me, I can conceive no necessity in indifference, nor can I reconcile two things that are so opposite.

Yet I will suppose that we clearly see that God through an entirely indifferent will has established eternal laws and truths for all times and for all places, and that they are now immutable because of His decree. But where do men see this decree? Has God created some being representative of this decree? Will they say that this decree is a modification of their soul? They clearly see this decree, for they have learned from it that immutability attaches to eternal laws and truths; but where do they see it? Certainly, unless they see it in God, they do not see it; for this decree can be only in God, and it can be seen only where it is. Philosophers can be certain of nothing, then, unless they consult God and He answers them. Their protests here are in vain—they must either submit or remain silent.

But at bottom, this decree is an unfounded product of the imagination. When we think about order and eternal truths and laws, we do not naturally seek their cause, for they have none. We do not clearly see the necessity of this decree, nor do we immediately think about it—rather, we see with evidence through simple perception that the nature of numbers and of intelligible ideas is immutable, necessary, and independent. We clearly see that it is absolutely necessary that twice four be eight and that the square of the diagonal of a square be double that square. If anyone doubts the absolute necessity of these truths, it is because he looks away from their light, reasons on some false premiss, and seeks their nature, immutability, and independence elsewhere than in the truths themselves. Thus, the decree of immutability for these truths is a fiction of the mind, which, supposing that it does not see what it perceives in God's wisdom, and knowing that God is the cause of all things, feels itself constrained to imagine a decree in order to ascribe immutability to certain truths it cannot fail to recognize as immutable. But the supposition is false and must be guarded against. Only in the wisdom of God do we see eternal, immutable, and necessary truths. Nowhere else but in this wisdom do we see the order that God Himself is constrained to follow, as I have just indicated. The mind is created only for this wisdom, and in a certain sense the mind can see only it; for if the mind can see creatures, it does so only because He whom it sees (though in a very imperfect way during this life) comprehends all creatures in the immensity of His being in an intelligible fashion suited to the mind, as I have indicated elsewhere.

It seems clear to me that if we did not have within us the idea of the infinite, and if we did not see everything through the natural union of our soul with infinite and universal Reason, we would not be free to think about all things. For the mind can will to apply itself only to the things of which it has some idea, and it now has the power to think about only those things to which it can will to apply itself. Thus, man is stripped of his freedom to think about all things if his mind is severed from Him who contains all things. Furthermore, given that we can love only what we see, it is clear that if God gave us only particular ideas He would determine all the impulses of our will in such a way that we could love only particular beings. For in the final analysis, if we did not have an idea of the infinite, we could not love it; and if those who assert that they have no idea of God spoke the truth, I would not hesitate in saying that they never have loved God, for it appears to me quite certain that one can love only what one sees.

Finally, if order and eternal laws were not immutable by the necessity of their nature, the foundation of the clearest and strongest arguments of religion would seemingly be destroyed, as well as freedom and the most certain of the sciences. For it is certain that the Christian religion, which offers us the mediation and reparation of Jesus Christ, assumes the corruption of nature by Original Sin. Now, what proof can we have of this corruption? The flesh struggles against the mind, you will say, the flesh subjugates and dominates the mind. I agree. But this, a libertine will answer, is no disorder. It pleases God, He has ordained it thus, He is the master of His decrees, He establishes whatever order pleases Him amongst His creatures. How will you prove to him that it is a disorder for minds to be subordinated to bodies unless you have a clear idea of order and its necessity, unless you know that God Himself is constrained to follow this order by the necessary love He bears for Himself? Besides, if this order depends on God's free decree, it will always be necessary to call upon God to learn of His decree; God will always have to be consulted (in spite of the disliking certain learned people have for appealing to Him); we shall have to yield to this truth, that our instruction depends upon God. But this free decree that caused order is, for the reasons I have already given, a fiction of the mind.

If it is not a necessary order according to which man be made for his Author and that our will conform to the order that is the essential and necessary rule of God's will, if it is not true that actions are good or evil as they conform or not with an immutable and necessary order and that this same order requires that the former be rewarded and the latter punished, finally, if all men do not naturally have a clear idea of order, but an order that is such that God Himself cannot will otherwise than as this order prescribes (because God cannot will disorder), then surely I can see nothing but universal confusion. For how could we criticize the most infamous and most immoral actions of pagans to whom God has not given any laws? What reason will dare to judge them if there is no sovereign reason that condemns them, if there is no immutable order or indispensable law according to which they should be judged?

There was a poet[a] who said that it is impossible to distinguish what is moral from what is immoral. There was a philosopher[b] who said that it is a weakness to be ashamed of infamous actions. Similar paradoxes are often proposed as a result of a heated imagination or in a fit of passion. But why will you condemn these opinions unless there is an order, a rule, a universal and necessary reason, that is always present to those who know how to retreat within themselves. In many instances we have no hesitation in judging ourselves and others, but by what authority do we act unless the Reason that judges in us when it seems to us that we pronounce judgments against ourselves and others is sovereign over us and all other men?

But if this Reason were not present to those who retreat within themselves, and if pagans too were not naturally united to some extent with the immutable order I am speaking of, what sin or what disobedience would they have been guilty of, and according to what justice would God punish them? I say this because there is a prophet[c] who tells me that God Himself wills men to be His arbiter between Him and His people provided that they judge them according to the immutable and necessary order of justice. Nero killed his mother, granted. But in what did his evil consist? He followed the natural impulse of his hatred. In no way did God forbid him in this. The law of the Jews was not given to him. Perhaps you will say that the natural law prohibits such actions and that this law was known to him. But what proof have you of this? For my part, I agree, because this indeed is an irresistible proof that there is a necessary and immutable order and that every mind knows this order more clearly as it is more closely joined to the universal reason and as it is less sensible to the impressions of its senses and passions—in short, as it is more reasonable. But I must now explain as clearly as I can the view I have of order and the divine or natural law, for the difficulty in agreeing with what I say perhaps springs from failing to perceive distinctly my thought.

It is certain that God contains within Himself in an intelligible fashion the perfection of all the beings He has created or can create, and that through these intelligible perfections He knows the essence of all things, as through His volitions He knows their existence. Now, these perfections are also the human mind's immediate object (for the reasons I have already given). Therefore, the intelligible ideas or perfections that are in God and that represent to us what is external to God are absolutely immutable and necessary. Now, truths are but relations of equality or inequality between these intelligible beings (since it is true that twice two is four or that twice two is not five only because there is a relation of equality between twice two and four, and one of inequality between twice two and five). Truths, therefore, as well as ideas, are necessary and immutable. It has always been true that twice two is four and this cannot become false. This is clear, without it being necessary *that God as sovereign legislator has established these truths,*[a] as Descartes has asserted in his reply to the sixth objections against his metaphysical meditations.

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[a] "Nec natura potest justo secernere iniquum." Lucretius. [Horace; *Satires* I, 3, v.113.]

[b] Diogenes.

[c] "Nunc ergo habitatores Jerusalem & viri Juda judicate inter me & vineam meam." Isa. 53 [5:3].

We understand easily enough what truth is, but we have some difficulty in conceiving what the necessary and immutable order is, or what the natural and divine law is that God necessarily wills and that the righteous likewise will. For what makes a man moral is that he loves order and conforms his will to it in all things—just as the sinner is such only because he does not find order pleasing in all things and because he would have order conform to his own wishes. Yet it seems to me that these things are not as mysterious as might be imagined, and I think the reason why they are found so troublesome comes from the mind's difficulty in raising itself up to abstract and metaphysical thoughts. Here, then, are some of my thoughts on order.

It is evident that the perfections in God that represent created or possible beings are not all equal insofar as they represent these beings, and that those, for example, that represent bodies are not as noble as those that represent minds, and furthermore, that even among those that represent only bodies or only minds, there are infinite degrees of perfection. All this is easily and clearly conceived, although there is a great deal of difficulty in reconciling the Divine Being's simplicity with this variety of intelligible ideas that He contains in His wisdom. For it is clear that if all God's ideas were in every sense equal, He could not distinguish among His works, since He sees His creatures only in what in Him represents them, and if the idea of a watch that shows, besides the hour, all the different motions of the planets were not more perfect than the idea of a watch that shows only the hour, or than the idea of a circle or of a square, then a watch would not be more perfect than a circle. For one can judge the perfection of works only through the perfection of the ideas one has of them; and if there were no more intelligence or mark of wisdom in a watch than in a circle, there would be no greater difficulty in conceiving the most complex machines than in conceiving a square or a circle.

If it is true, then, that God, who is the universal Being, contains all beings within Himself in an intelligible fashion, and that all these intelligible beings that have a necessary existence in God are not in every sense equally perfect, it is clear that there will be a necessary and immutable order among them, and that just as there are necessary and eternal truths because there are relations of magnitude among intelligible beings, there must also be a necessary and immutable order because of the relations of perfection among these same beings. An immutable order has it, then, that minds are more noble than bodies, as it is a necessary truth that twice two is four, or that twice two is not five.

So far, order seems to be more of a speculative truth than a necessary law. For if we consider order as we have just done, we clearly see, for example, that it is a truth that minds are more noble than bodies, but we do not see that this truth is at the same time an order that has the force of law and that we are obliged to prefer minds to bodies. It must be considered, then, that God loves Himself with a necessary love, and that thus He loves what in Him represents or contains greater perfection more than what contains less—so much so that if we wish to suppose an intelligible mind to be a thousand times more perfect than an intelligible body, the love by which God loves Himself would necessarily be a thousand times greater for the intelligible mind than for the intelligible body; for God's love is necessarily proportionate to the order among the intelligible beings He contains, since He necessarily loves His own perfections. As a result of this, the order that is purely speculative has the force of law with regard to God Himself, given, as is certainly the case, that God necessarily loves Himself and that He cannot contradict Himself. Furthermore, God cannot love intelligible bodies more than intelligible minds, although He can love created bodies more than minds, as I shall soon show.

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[a] Art. 6 and 8.

Now, this immutable order that has the force of law with regard to God Himself clearly has the same force with regard to us. For, since God has created us in His image and likeness, He cannot will that we love more what deserves to be loved less—He wills that our will conform with His and that here below we freely and hence meritoriously render things the justice that He necessarily renders them. His law, the immutable order of His perfections, is therefore also ours; and this order is not unknown to us, and even our natural love excites us to follow it when we retreat within ourselves and our senses and passions leave us free—in short, when our self-love does not corrupt our natural love. Given that we are made for God and cannot be entirely separated from Him, we see this order in Him and we are naturally led to love it, for it is His light that illumines us and His love that animates us (although our senses and passions obscure this light and turn the impression we have for loving Him according to this order against order itself). However, in spite of concupiscence, which conceals order from us and prevents us from following it, order is always a law that is essential and without exception with regard to us, and not only with regard to us but to all created intelligences and even the damned—for I do not think that they are so removed from God that they do not yet have some faint idea of order in which they find some beauty and that they are not perhaps even ready to conform themselves to it in certain particular cases where their self-love is not at stake.

Corruption of the heart consists in opposition to order. Therefore, given that the evil or the corruption of will is not equal even among the damned, it is clear that they are not equally opposed to order, and that they do not detest it in everything, unless they do so as a result of their hatred of God. For just as one cannot detest the good considered simply as such, one can detest order only when it seems to be contrary to our inclinations. But even if it should appear contrary to our inclinations, it still remains for us a law that condemns and even punishes us by a worm that never dies [Mark 9:44].

Perhaps, then, we can now see the nature of the immutable order of justice and how this order has the force of law through the necessary love that God has for Himself. We can conceive how this law is universal for all minds as well as for God Himself, why it is necessary and absolutely without exception. We can see clearly (provided that what I have just said is seriously considered) that to maintain that ideas that are eternal, immutable, and common to all intelligences, are only perceptions or momentary particular modifications of the mind, is to establish Pyrrhonism and to make room for the belief that what is moral or immoral is not necessarily so, which is the most dangerous error of all. Finally, we can easily conceive in general that this law, the immutable order, is the principle of all human and divine laws, and that it is according to this law that all intelligences are judged and all creatures given the rank they deserve.

I admit that it is not easy to explain all this in detail, and I shall not risk the undertaking. For if my intention were to show the connection between certain particular laws and the general law, or between certain ways of behaving and order, I would necessarily become involved in difficulties that I could not perhaps resolve, and that would lead me far from my topic.

Nonetheless, if you consider that God has not and cannot have any law other than His wisdom and the necessary love He has for it, you will easily judge that all the divine laws must depend on it. And if you take note that He created the world only in relation to this wisdom and love (since He acts only for Himself), you will have no doubt that all natural laws must tend to the preservation and perfection of this world according to indispensable order and depending upon necessary love—for the wisdom and will of God rule all things.

I need not explain this principle at greater length. What I have said is enough for the following conclusion, that as nature was first instituted, minds could not have been subordinated to bodies. For since God cannot act in ignorance and in spite of Himself, He created the world according to wisdom and through the impulse of His love—He made all things through His Son and in the Holy Spirit as Scripture teaches us. Now, in the wisdom of God, minds are more perfect than bodies; and as a result of the necessary love that God has for Himself, He prefers the more perfect to the less perfect. Thus, minds could not have been subordinated to bodies as nature was first instituted. Otherwise we would have to say that in creating the world God did not follow the direction of His eternal wisdom, nor the impulses of His natural and necessary love, which is inconceiveable and which even contains a manifest contradiction.

It is true that the created mind is now subordinated to the body, but this is because order considered as a necessary law would have it so. This is because God, whose self-love is a necessary love and is always His inviolable law, cannot love minds that are opposed to Him; consequently, He cannot prefer them to bodies in which there is nothing that is evil or that He hates. For God does not love sinners in themselves; they subsist in the universe only through Jesus Christ. God preserves and loves them only so that they might cease being sinners through the grace of Jesus Christ, or, if they remain sinners eternally, so that they might be eternally condemned by the immutable and necessary order and by the judgment of Jesus Christ (through whose power they subsist for the glory of divine justice, for without Jesus Christ they would be annihilated). I mention this in passing to remove certain difficulties that might remain from what I said elsewhere about Original Sin or the general corruption of nature.

It seems to me worthwhile to point out that the mind knows objects in only two ways: through illumination [*par lumiere*] and through sensation. It sees things through *illumination* when it has a *clear idea* of them, and when by consulting this idea it can discover all the properties of which these things are capable. It sees things through *sensation* when it finds no clear idea of these things in itself to be consulted, when it is thus unable to discover their properties clearly, and when it knows them only through a confused sensation, without illumination and without evidence. Through illumination and through a clear idea, the mind sees numbers, extension, and the essences of things. Through a confused idea or through sensation, it judges about the existence of creatures and knows its own existence.

The things the mind preceives through illumination or through a clear idea it perceives in very perfect fashion, and it even sees clearly that whatever obscurity or imperfection there is in its knowledge is due to its own weakness and limitation or some lack of attentiveness on its part, and not to the imperfection of the idea it perceives. But what the mind perceives through sensation is never clearly known to it, not because of some lack of attentiveness on its part (for we always attend closely to what we sense), but because of the inadequacy of the idea, which is extremely obscure and confused.

From this we can judge that it is in God or in an immutable nature that we see all that we know by means of illumination or clear idea—not only because through illumination we see only numbers, extension, and the essences of things, which do not depend on a free act of God, as I have already pointed out, but also because we know these things in very perfect fashion, and because we would even know them in an infinitely perfect fashion if our capacity for thought were infinite, since nothing is lacking to the idea representing them. We must also conclude that everything we know through sensation is seen in itself. However, this is not to say that we can produce in ourselves any new modification, or that our soul's sensations or modifications can represent objects upon whose occasion God excites them in us, but only that our sensations (which are in no way different from us, and which as a result can never represent anything different from ourselves) can, nonetheless, represent the existence of beings or, rather, make us judge that they exist. For as God, upon the presence of objects, excites our sensations in us through an insensible action that we do not perceive, we imagine that we receive from the object not only the idea that represents its essence but also the sensation that makes us judge that it exists—for there is always a *pure idea* and a *confused sensation* in the knowledge we have of the existence of beings, the knowledge of God and of our soul excepted. I exclude the existence of God, which we know through a pure idea and without sensation, because His existence depends on no cause and is contained in the idea of an infinite and necessary being, for as I have proved elsewhere,[a] if He is thought of, He must exist. I also exclude the existence of our soul, because we know through inner sensation that we think, will, and perceive, and because we have no clear idea of our soul, as I have sufficiently explained in the seventh chapter of the second part of the third book and elsewhere.

Here are some of the arguments that can be added to those I have already given to prove that only God enlightens us and that the immediate and direct object of our clear and evident knowledge is an immutable and necessary nature. Several objections are commonly raised against this view; I shall now try to answer them.

Objections

Against what has been said: that only God enlightens us and that we see all things in Him.

First Objection

Our soul thinks because of its *nature*. In creating it, God gave it the *faculty* of thinking and it needs nothing more; but if it does need something, let us stick to what experience teaches us about our senses, i.e., that they are the cause of our ideas. To argue against experience is a bad way of philosophizing.

Reply

I am amazed that the Cartesian gentlemen who so rightly reject the general terms *nature* and *faculty* should so willingly employ them on this occasion. They criticize those who say that fire burns by its *nature* or that it changes certain bodies into glass by a natural *faculty*, and yet some of them do not hesitate to say that the human mind produces in itself the ideas of all things by its *nature*, because it has the *faculty* of thinking. But, with all due respect, these terms are no more meaningful in their mouth than in the mouth of the Peripatetics. True, our soul is what it is by its nature and necessarily perceives what affects it, but God alone can act on it; He alone can illuminate it, affect it, or modify it through the efficacy of His ideas.

I realize that the soul can think, but I also know that extension can have figures; the soul is capable of volition as matter is of motion. But just as it is false that matter, although capable of figure and motion, has in itself a *power*, a *faculty*, a *nature* by which it can move itself or give itself a figure that is now round, now square, so it is false that the soul, although naturally and essentially capable of knowledge and volition, has any *faculties* by which it can produce in itself its own ideas or its own impulse toward the good,[b] for it necessarily wishes to be happy. There is a big difference between being mobile and moving oneself. Matter is by its nature mobile and capable of figure; it cannot even subsist without figure. But it cannot move itself, it cannot shape itself, and lacks a faculty to do so. The mind is by its nature capable of impulses and ideas, I agree.

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[a] Bk. 4, ch. 11.

[b] As opposed to particular goods; see the first Elucidation.

But it cannot move itself, it cannot enlighten itself—it is God who works everything of a material nature in minds as well as in bodies. Can it be said that God works the changes that take place in matter but not those that take place in the mind? Is it to render to God His due to leave these latter beings to their own devices? Is He not equally the master of all things? Is He not the creator, preserver, and true mover of minds as well as of bodies?

But if you would have it that creatures have the faculties they are ordinarily conceived to have,[a] or that natural bodies be said to have a *nature* that is the principle of their motion and rest (as Aristotle and his followers would have it), all my ideas would be overthrown. But I would rather agree to this than to say that the mind enlightens itself, or that the soul has the power to move the members of its body in various ways and to communicate to them feeling and life, or that it is the soul that gives heat to the blood, motion to the spirits, and its size, disposition, and figure to the rest of the body—I would rather all this than to say that the mind gives itself its own impulse and light. If God does not do all things, let Him do at least what is greatest and most perfect in the universe. And if creatures do something, let them move bodies and order them as they will, but let them not act on minds.

Let us say that bodies move each other after being moved themselves, or, rather, let us ignore the cause of these different dispositions of matter, which does not concern us. But let our minds not be ignorant of Him from whom their enlightenment comes, the *Reason* to which they are essentially related, the Reason that is spoken about so much and understood so little. Let our minds know Him from whom they receive everything capable of making them happier and more perfect, and let them realize the full extent of their dependence on God, who continually gives them all that they now have, for as a great saint says in another context,[b] *it is culpable pride to use the things that God gives us as if they were natural to us*. Above all, let us not imagine that the senses instruct reason, or that the body enlightens the mind, or that the soul receives from the body what it itself lacks. It is better to believe that one is self-dependent than truly dependent on bodies; it is better to believe oneself one's own master than to seek one's master among creatures that have no value to us. But it is best to accede to the eternal truth, which assures us in the gospel that only it is our teacher,[c] than to rely on the reports of our senses or of men who dare to speak to us as our teachers. Experience, whatever is to be said of it, does not encourage prejudice, for our senses are but the occasional causes of God's action on us. Our teachers are only prompters—they too are but the occasional causes of the instruction that eternal wisdom gives us in the most secret recesses of our reason. But because this wisdom enlightens us in a completely non-sensible way, we fancy that our eyes, or the words of those who reverberate the air against our ears, produce this illumination, or express the intelligible voice that instructs us inwardly. It is for this reason, as I have pointed out elsewhere, that Jesus Christ was not satisfied with instructing us through His divinity in an intelligible way; He wished further to instruct us in sensible fashion by His humanity; He wished to teach us that He is our master in every way. And because we are unable without difficulty to retreat within ourselves in order to consult Him as the eternal truth, the immutable order, the intelligible light, He made the truth sensible through His words, order worthy of love through His example, and light visible through a body that adapts it to our weakness. And yet we remain ungrateful, immoral, stupid, and insensible enough to consider (against His express prohibition) as our teachers or the cause of our knowledge, not merely other men, but perhaps even the vilest and most despicable of bodies.

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[a] See the last Elucidation concerning the efficacy of secondary causes [15].

[b] "Est quippe superbia & peccatum maximum uti datis tanquam innatis." St. Bern. *De diligendo Deo*.

[c] Matt. 23 [vv. 8–10]. See St. Augustine's *De magistro*.

Second Objection

Given that the soul is more perfect than bodies, why can it not contain what represents them? Why could the idea of extension not be one of its modifications? Only God acts on it and modifies it—granted, but why should it see bodies in God if it can see them in its own substance? The soul is not material, admitted. But God, though He is a pure spirit, sees bodies in Himself; why could not the soul, then, see them by considering itself, even though it itself is spiritual?

Replies

Do you not see that there is this difference between God and the human soul, that God is a being without restriction, a universal and infinite being, whereas the soul is a kind of particular being? It is a property of an infinite being to be simultaneously one and all things, compounded, as it were, of an infinity of perfections, and to be so simple that each perfection it possesses contains all other perfections without any real distinction; for since each divine perfection is infinite, it constitutes the entire divine being. But as the soul is a particular being, a limited being, it cannot have extension in it without becoming material, without being composed of two substances. God, then, contains bodies within Him in an intelligible way. He sees their essences or ideas in His wisdom, and their existence in His love or volitions. We must speak this way because God made bodies, and because He knew what He made even before anything was made. But the soul cannot see in itself what it does not contain; it cannot even see clearly what it does contain, which it can only sense in a confused way. Let me explain this point.

The soul does not contain intelligible extension as one of its modes because this extension is not perceived as a mode of the soul's being, but simply as a being. This extension is conceived by itself and without thinking of anything else; but modes cannot be conceived without perceiving the subject or being of which they are modes. We perceive this extension without thinking about our mind; we cannot even conceive that this extension could be a modification of our mind. A figure is disclosed in it when this extension is conceived as limited; but the mind's limits do not serve to give it figure. Since this extension has parts, it can be divided in the same sense that it is extended, i.e., into intelligible parts; but we see nothing in the soul that is divisible. The extension we see, then, is not a mode of the soul, and therefore it cannot be seen in it.

But, you will say, for these same reasons God would not be able to see His creatures in Himself. This would be true if ideas of creatures were modifications of His substance, but the Infinite Being is incapable of modifications.[a] God's ideas of creatures are, as Saint Thomas says, only His essence, insofar as it is participable or imperfectly imitable, for God contains every creaturely perfection, though in a divine and infinite way; He is one and He is all. Thus, He can see them in Himself and only in Himself, for His knowledge is drawn only from Himself. But the soul, however it might sense itself, does not know either itself or its modifications, the soul which is a particular being, a very limited and imperfect being. Certainly it cannot see in itself what is not there in any way at all. How could we see in one species of being all species of being, or in a finite and particular being a triangle in general and infinite triangles? For the soul indeed perceives a triangle or circle in general, while it is a contradiction that the soul should be able to have a modification in general. The sensations of color that the soul ascribes to figures makes them particular, because no modification of a particular being can be general.

To be sure, we can assert what we clearly conceive. Now, we clearly conceive that the extension we see is something distinct from ourselves. We can say, then, that this extension is not a modification of our being, and that it is indeed something distinct from ourselves. For it should be noted that the sun that we see, for example, is not the one we look at. The sun, and everything else in the material world, is not visible by itself. This I have proved elsewhere. The soul can see only the sun to which it is immediately joined, only that sun that like it occupies no place. Now, we see clearly and perceive distinctly that this sun is something distinct from us. Thus, we speak contrary to our light and consciousness when we say that the soul sees in its own modifications all the objects it perceives.

Pleasure, pain, taste, heat, color, all our sensations and all our passions, are modifications of our soul. But be that as it may, do we clearly know them? Can we compare heat with taste or smell with color? Do we know the relation between red and green, or even between two shades of green? Such is not the case with different figures, which we can compare with each other; we know their relations exactly, we know precisely that the square of the diagonal of a square is double that square. What relation is there between these intelligible figures, which are very clear ideas, and our soul's modifications, which are but confused sensations? Why suppose, then, that these intelligible figures cannot be perceived by the soul unless they are its modifications, since the soul knows nothing of what happens to it through a clear idea, but only through consciousness or inner sensation, as I have proved elsewhere and as I shall again prove in the following Elucidation. If we could see the figures of bodies only in ourselves, they would be, on the contrary, *unintelligible*, for we do not know ourselves. We are but shadows to ourselves; to see ourselves, we must look beyond ourselves, and we shall never know what we are until we view ourselves in Him who is our light and in whom all things become light. For only in God are the most material beings perfectly intelligible; but outside of Him the most spiritual of substances become utterly invisible. For only what is intelligible can affect intelligences. Surely, only God, only His always efficacious substance, can affect, enlighten and nourish our minds, as Saint Augustine says. It is not possible that we should, I do not say, sense, for we can sense ourselves only in ourselves, but clearly know ourselves, i.e., discover the nature and properties of our soul, elsewhere than in our divine and eternal model, that is, elsewhere than in the always luminous substance of the divinity, insofar as it can be participated in by a spiritual creature, or insofar as it is representative of such a creature. We know clearly the nature and properties of matter, for the idea of extension that we have in God is very clear. But as we do not see in God the idea of our soul, we sense both what we are and whatever actually takes place in us. But it is impossible for us to discover clearly what we are, or any of the modifications of which we are capable.

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[a] See my *Réponse* to the third posthumous letter of Arnauld.

Third Objection

Nothing in God can be moved, nothing in Him can have figure. If there is a sun in the intelligible world, this sun is always equal to itself. The visible sun appears greater when it is near the horizon than when it is at a great distance from the horizon. Therefore, it is not this intelligible sun that we see. The same holds true for other creatures. Therefore, we do not see God's works in Him.

Reply

A sufficient reply to this would be that nothing in God is really figured and thereby capable of motion, but that there are in God figures that are intelligible and, consequently, intelligibly mobile. For it cannot be doubted that God has the idea of the bodies He has created and constantly moves, that He can find this idea only in His substance, and that He is at least able to inform us of it. But to clarify this matter, it must be realized that God contains in Himself an ideal or intelligible infinite extension; for since He has created it, God knows extension, and He can know it only in Himself. Thus, since the mind can perceive a part of this intelligible extension that God contains, it surely can perceive in God all figures; for all finite intelligible extension is necessarily an intelligible figure, since figure is nothing but the boundary of extension. Furthermore, we see or sense a given body when its idea, i.e., when some figure composed of intelligible and general extension, becomes sensible and particular through color or some other sensible perception by which its idea affects the soul and that the soul ascribes to it, for the soul almost always projects its sensation on an idea that strikes it in lively fashion. Therefore, there need be in God no sensible bodies or real figures in intelligible extension in order for us to see them in God or in order for God to see them in Himself. It is enough that His substance, insofar as it can be participated in by the corporeal creature, should be able to be perceived in different ways.

Likewise, if, as it were, a figure of intelligible extension made sensible by color should be taken successively from different parts of this infinite extension, or if a figure of intelligible extension could be perceived as turning on its center or as gradually approaching another, we would perceive motion in an intelligible or sensible figure without there being any actual motion in intelligible extension. For God does not see the actual motion of body in His substance, or in the idea He has of them in Himself, but only in the knowledge He has of His volitions with regard to them. Even their existence He sees only in this way, because only His will gives being to all things. God's volitions change nothing in His substance, they do not move it. In this sense, intelligible extension cannot be moved even intelligibly. But although we might suppose that the intelligible parts of the idea of extension always maintain the same relation of intelligible distance between them and that this idea therefore cannot be moved even intelligibly, nonetheless, if we conceive of a given created extension to which there corresponds a given part of intelligible extension as its idea, we shall be able through this same idea of space (though intelligibly immobile) to see that the parts of the created extension are mobile, because the idea of space, although assumed intelligibly immobile, necessarily represents all sorts of relations of distance and shows that the parts of a body can fail to maintain the same situation relative to each other. Furthermore, although we do not see bodies in themselves, but only through intelligible extension (let this extension be assumed intelligibly immobile or not), we can through it actually see or imagine bodies in motion because it appears mobile to us due to the sensation of color, or the confused image remaining after the sensation that we successively attach to different parts of the intelligible extension that furnishes us with an idea when we see or imagine the motion of some body. It is easier to understand all this than to give an unambiguous explanation of it.

From what I have just said, you can understand why you see the intelligible sun now greater, now smaller, although it is always the same with regard to God. All that is needed for this is that we sometimes see a greater part of intelligible extension and sometimes a smaller. Since the parts of intelligible extension are all of the same nature, they may all represent any body whatsoever.

It should not be imagined that the intelligible world is related to the sensible, material world in such a way that there is an intelligible sun, for example, or an intelligible horse or tree intended to represent to us the sun or a horse or a tree, or that everyone who sees the sun necessarily sees this hypothetical intelligible sun. Given that all intelligible extension can be conceived of as circular, or as having the intelligible figure of a horse or a tree, all of intelligible extension can serve to represent the sun, or a horse or a tree, and consequently can be the sun or a horse or a tree of the intelligible world and can even become a visible and sensible sun, horse, or tree if the soul has some sensation upon the occasion of bodies to attach to these ideas, i.e., if these ideas affect the soul with sensible perceptions.

Thus, when I said that we see different bodies through the knowledge we have of God's perfections that represent them, I did not exactly mean that there are in God certain particular ideas that represent each body individually, and that we see such an idea when we see the body; for we certainly could not see this body as sometimes great, sometimes small, sometimes round, sometimes square, if we saw it through a particular idea that would always be the same. But I do say that we see all things in God through the efficacy of His substance, and particularly sensible things, through God's applying intelligible extension to our mind in a thousand different ways, and that thus intelligible extension contains all the perfections, or rather, all the differences of bodies due to the different sensations that the soul projects on the ideas affecting it upon the occasion of these same bodies. I have spoken in a different way, but you should realize that I did so only to make certain of my arguments stronger and more intuitive, and you must not think on the basis of what I have just said that these arguments no longer obtain. If it were necessary, I could give the reasons for the different ways in which I have explained myself.

I shall not venture to treat this subject in depth[a] for fear of saying things either too abstract or out of the ordinary, or, if you will, in order not to risk saying things I do not know and cannot discover. Here instead are several passages from Scripture that seem contrary to what I have just asserted. I shall try to explain them.

Fourth Objection

In his gospel and the first of his epistles, Saint John says *That no one has ever seen God,* "DEUM nemo vidit unquam,[b] unigenitus qui est in sinu patris ipse enarravit.[c]

Reply

I answer that seeing His creatures in Him is not really seeing God. Seeing the essences of creatures in His substance is not seeing His essence, just as merely seeing the objects it represents is not seeing a mirror. Seeing the essence of God, not in its absolute being, but in relation to creatures or insofar as it is representative of them, is not seeing the essence of God.

Nothing precludes us from agreeing with Saint Paul,[d] Saint Augustine, Saint Gregory, and several other Church Fathers, that we see God even in this life, though in very imperfect fashion. Here are the words of Saint Gregory in his *Homilies on Job*:[e] "A luce incorruptibili caligo nos nostrae corruptionis obscurat; cumque & videri aliquatenus potest, & tamen videri lux ipsa sicuti est non potest, quam longe sit indicat. Quam si mens non cerneret, nec quia longe esset videret. Si autem perfecte jam cerneret, profecto hanc quasi per caliginem non videret. Igitur quia nec omnino cernitur, nec rursum omnino non cernitur, recte dictum est quia a longe Deus videtur." Although Saint Gregory, to explain the passage of Job "Oculi ejus a longe prospiciunt," says that in this life we see

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[a] See my *Réponse aux vrayes & fausses idées,* my first *Lettre touchant la defense* & especially my *Réponse à une 3 lettre posthume de M. Arnauld,* as well as certain other passages that can perhaps eliminate all the difficulties the most attentive and most careful reader might form.

[b] Ch. 1. 18 [Ep. (1), 4, 12].

[c] Ch. 4. 12 [Ev. 1. 18].

[d] To the Corinthians, ch. 13 [1 Cor. 13:12].

[e] Bk. 31, ch. 20 [in c.39 Job. cap. 51].

God only from a distance, this is not because God is not very present to us, but because the clouds of our concupiscence conceal Him from us, "caligo nos nostrae corruptionis obscurat." For in other passages he compares, following Saint Augustine, the light of God, which is God Himself, to the light of the sun that surrounds us, but that we do not see if we are blind or if we close our eyes because overwhelmed with its brilliance, "In sole oculos clausos tenemus."

Saint Augustine[a] goes even farther than his faithful follower Saint Gregory. For although he agrees that we now know God only in very imperfect fashion, he nonetheless claims in several passages that God is better known to us than the things we imagine we know best. "He who made all things," he says, "is closer to us than the very things He made, for it is in Him that we live and move and have our being. The greater part of the things He made are not suited to our mind because they are corporeal and of a kind different from it." And further on: "Those who have known the secrets of nature are justly condemned in the Book of Wisdom, for if they can have penetrated what is most hidden from men, how much more easily should they be able to discover the Author and Sovereign of the universe? The foundations of the earth are hidden from our eyes, but He who has cast down these foundations is close to our minds." This is why the holy doctor believes that he who has charity can know God better than he knows his brother. Says he, "Ecce jam potest notiorem Deum habere quam fratrem. Plane notiorem, quia praesentiorem: notiorem, quia interiorem: notiorem, quia certiorem."[b] I shall relate no further proofs of Saint Augustine's view. If you wish them, you will find all sorts of them in the learned anthology Ambrosius Victor made of them, in volume two of his *Philosophia Christiana*.

But to return to the passage from Saint John, "Deum nemo vidit unquam." I believe that the evangelist's aim, when he says that we have never seen God, is to point out the difference between the Old and New Testaments, between Jesus Christ and the prophets and patriarchs, of whom it is written that they saw God. For Jacob, Moses, Isaiah, and the others saw God only with the eyes of the body and under a different form. They did not see God Himself, "Deum nemo vidit unquam." But the only Son of the Father who is in His bosom has told us of what He saw: "Unigenitus qui est in sinu Patris: ipse enarravit."

Fifth Objection

Writing to Timothy [1, 6:16], Saint Paul says that God dwells in an inaccessible light that no one has ever seen, nor ever can see. If the light of God is inaccessible, we cannot see all things in it.

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[a] "Propinquior nobis qui fecit, quam multa quae facta sunt. In illo enim vivimus, movemur & sumus" [Paul, Act. 17, 28]. "Istorum autem pleraque remota sunt a mente nostra propter dissimilitudinem sui generis. Recte culpantur in libro sapientiae inquisitores hujus saeculi. Si enim tantum, inquit potuerunt valere ut possent aestimare saeculum, quomodo ejus Dominum non facilius invenerunt?" [Sap. 13, 9]. "Ignota enim sunt fundamenta oculis nostris & qui fundavit terram, propinquat mentibus nostris." *Lib. imp. de Gen. ad litt.* bk. 5. ch. 16.

[b] *De Trinitate*. bk. 8, ch. 8. See the preface of the *Dialogues on Metaphysics*, or the *Réponse aux vraies & fausses idées*, chapters 7 & 21, where I prove my view through the teaching of St. Augustine.

Reply

Saint Paul cannot be in disagreement with Saint John,[a] who tells us that Jesus Christ is the true light that enlightens all men coming into this world. For the mind of man that several[b] Fathers call an illuminated or enlightened light, "lumen illuminatum," is enlightened only by the light of eternal wisdom, which these same Fathers therefore call illuminating light, "lumen illuminans." David exhorts us to draw near God in order to be enlightened by Him: "Accedite ad eum, & illuminamini" [Ps. 33, v.6]. But how can we be enlightened by Him if we cannot see the light by which we are to be enlightened? Thus, when Saint Paul says that this light is inaccessible, he means to the carnal man[c] who does not retreat within himself to contemplate it. Or, if he is speaking of all men, the explanation is that there is no one who fails to be distracted from perfect contemplation of the truth because our body constantly upsets the mind's attention.

Sixth Objection

In answering Moses, who had wished to see Him, God said, "You cannot see my face; for no man shall see me and live. NON videbit me homo & vivet" [Exod. 33:20].

Reply

It is clear that the literal sense of the passage is in no way contrary to what I have said up till now. For I do not maintain that we can see God in this life in the way in which Moses wished to do so. Yet I make this reply, that in order to see God it is necessary to die, for the soul is joined to the truth to the extent that it is released from the body. This is a truth that we do not think about enough. Those who follow the impulses of their passions, those whose imagination is tainted by the enjoyment of pleasures,[d] those who have increased the union and correspondence of their mind and body, in a word, those who *live*, cannot see God, for they cannot retreat into themselves in order to consult the truth. Happy, therefore, are those of a pure heart, of a disinterested mind and clear imagination, and who are in no way dependent on the world and hardly at all on their body; in a word, happy are those who are *dead*, for they will see God. Wisdom has said[e] this publicly on the mountain and it says it secretly to those who consult it by retreating within themselves.

Those who constantly awaken their concupiscence of pride, whose ambitious intentions know no bounds, who join and even subjugate their soul not only to

[a] Ch. 1 [v.9].

[b] St. Cyril of Alexandria on the words of St. John, "Erat lux vera" [John 1:9]. St. Augustine *Tract.* 14 on St. John [c. 3]. St. Gregory, c. 27, on ch. 28 of Job.

[c] "Inaccessibilem dixit sed omni homini humana sapienti. Scriptura quippe sacra omnes carnalium sectatores humanitatis nomine notare solet." St. Gregory, ch. 28, on ch. 28 of Job.

[d] "Sapientia non invenitur in terra suaviter viventium." Job 18 [28:12–13].

[e] Matt. 5:8.

their own body but also to those surrounding them, in short, those who *live* not only the life of the body but also the life of the world, cannot see God, for wisdom dwells in the most secret recesses of reason, while they are forever spreading themselves externally.

But those who constantly mortify the activity of their senses, who carefully preserve the purity of their imagination, and who courageously resist the impulses of their passions, in short, those who sever the bonds that make others slaves of the body and of perceptible grandeur, can discover countless truths as well as see that wisdom which is[a] "hidden from the eyes of all the living." To a certain extent they give up *living* when they retreat into themselves; they leave the body when they draw near the truth. For the human mind is so situated between God and bodies that to recede from the one is to draw near the other; it cannot leave bodies without approaching God, just as it cannot pursue bodies without withdrawing from Him. But because we cannot entirely leave the body before death, I admit that before death we cannot perfectly unite ourselves with God. According to Saint Paul[b] we can now see God in confused fashion as through a reflecting glass, but we cannot see Him face to face: "Non videbit me homo, & vivet." But we can see Him *ex parte*, that is, in a confused and imperfect way.

It should not be imagined that *life* is the same in all *living* men, nor that it consists in an indivisible point. The body's domination over the mind, which prevents us from uniting ourselves with God through knowledge of the truth, can vary. The soul is not equally joined in all men to the body it animates through its sensations, nor to those toward which it is led by its passions, and there are people who so mortify their concupiscence of pleasure and pride that they are hardly bound any longer either to their body or to the world. They are, as it were *dead*. Saint Paul gives us a good example of this. He chastized his body and reduced it to servitude [1 Cor., 9:27], and he so humiliated and annihilated himself that he no longer thought about the world, nor did the world think about him; for the world was crucified and dead for him as he was crucified and dead for the world.[c] It was because of this, says Saint Gregory, that he was so aware of the truth and so disposed to receive the divine lights contained in his Epistles,[d] which, however dazzling they may be, strike only those who, like him, mortify their senses and passions. For as he himself says, the carnal and sensual man cannot understand spiritual things because worldly knowledge, contemporary tastes, polite conversation, refinement, liveliness and beauty of imagination, and the things by which we live for the world and the world lives for us, induce in our mind a dull and frightening stupor with regard to every truth that we understand perfectly only in the silence of our senses and passions.

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[a] "Abscondiat est ab oculis omnium viventium." Job 28:2 [28:21].

[b] "Videmus nunc per speculum in aenigmate, tunc autem facie ad faciem. Nonc cognosco ex parte." 1 Cor. ch. 13 [v.12].

[c] Gal. 16:14 [6:14].

[d] "Animalis homo non percipit ea quae sunt spiritus Dei, stultitia enim est illi." 1 Cor. 2:14. "Ad moysen dicitur, non videbit me homo & vivet; ac si aperte diceretur: Nullus unquam Deum spiritaliter videt qui mundo carnaliter vivit." St. Gregory, c. 28, on ch. 28 of Job.

We must, therefore, wish for the death that unites us with God, or at least for the image of this death, the mysterious sleep during which all our external senses are deadened and we can listen to the voice of inner truth, which is heard only in the silence of night, when darkness hides sensible objects from us, and, as far as we are concerned, the world is, as it were, dead. ''It is thus,'' says Saint Gregory, ''that the bride had heard the voice of her bridegroom as if in her sleep, when she said, 'I sleep but my heart keeps watch' [Song of Sol. 5:2]. Externally I sleep, but inwardly my heart keeps watch, because with neither life nor feeling with regard to visible objects, I become extremely sensitive to the voice of inner truth which speaks to me in the most secret recesses of my reason. HINC est quod sponsa in canticis canticorum sponsi vocem quasi per somnium audierat, quae dicebat: 'Ego dormio, & cor meum vigilat.' Ac si diceret, dum exteriores sensus ab hujus vitae sollicitudinis sopio, vacante mente, vivacius interna cognosco. Foris dormio, sed intus cor vigilat, quia dum exteriora quasi non sentio, interiora solerter apprehendo. Bene ergo Eliu ait quod per somnium loquitur Deus.'' Morals of Saint Gregory on chapter 33 of Job.

ELUCIDATION ELEVEN

On the seventh chapter of the second part of the third book, where I prove that we have no clear idea either of our soul's nature or of its modifications.

I have said in a number of places, and I even think that I have sufficiently proved in the third book of the *Search after Truth*, that we have no *clear idea* of our soul, but only *consciousness* or inner sensation of it, and that thus we know it much less perfectly than we do extension. This seemed to me so evident that I did not think it necessary to argue so at further length. But the authority of Descartes,[a] who clearly says *that the nature of the mind is better known than the nature of any other thing*, has so prejudiced some of his disciples that what I wrote on the topic has served only to make me seem a person of weak character who cannot grasp and hold fast to abstract truths incapable of arousing and maintaining the attention of those who consider them.

I grant that I am extremely weak, sensuous, and coarse, and that my mind depends on my body in more ways than I can express. I know this and I feel it; and I work incessantly to increase this knowledge I have of myself. For if we cannot avoid being miserable, at least we must know and feel it. We must at least be humbled at the sight of our inner miseries and recognize the need we have of being delivered from this body of death that injects trouble and confusion into all the soul's faculties.

Yet the present question is so suited to the mind's capacity that I do not see the need for any great effort to resolve it (which is the reason I did not pause over it). For I think I can say that the ignorance of most men with regard to their own soul, of its distinction from the body, of its spirituality, immortality, and other properties, is enough to show clearly that they have no clear and distinct idea of it.

We are able to say that we have a clear idea of the body because in order to know the modifications it can have, it suffices to consult the idea representing it. We clearly see that it can be round or square, in motion or at rest. We have no difficulty conceiving that a square can be divided into two triangles, two parallelograms, two trapezia. When we are asked whether something does or does not belong to extension, we never hesitate in our response, because as the idea of extension is clear, we see without any difficulty through simple perception what it contains and what it excludes.

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[a] Reply to the fifth objection against the second Meditation, toward the end.

But surely we have no idea of our mind which is such that, by consulting it, we can discover the modifications of which the mind is capable. If we had never felt pleasure or pain we could not know whether or not the soul could feel them. If a man had never eaten a melon, or seen red or blue, he would consult this alleged idea of his soul in vain and would never discover distinctly whether or not it was capable of these sensations or modifications. I maintain, furthermore, that even if one is actually feeling pain or seeing color, one cannot discover through simple perception whether these qualities belong to the soul. One imagines that pain is in the body that occasions it, and that color is spread out on the surface of objects, although these objects are distinct from our soul.

In order to determine whether sensible qualities are modes of the mind, we do not consult the alleged idea of the soul—the Cartesians themselves consult, rather, the idea of extension, and they reason as follows. Heat, pain, and color cannot be modifications of extension, for extension can have only various figures and motion. Now there are only two kinds of beings, minds and bodies. Therefore, pain, heat, color, and all other sensible qualities belong to the mind.

Since we have to consult our idea of extension in order to discover whether sensible qualities are modes of our mind, is it not evident that we have no clear idea of the soul? Would we otherwise ever bother with such a roundabout way? When a philosopher wishes to learn whether roundness belongs to extension, does he consult the idea of the soul, or some idea other than that of extension? Does he not see clearly in the idea itself of extension that roundness is a modification of it? And would it not be strange if, in order to learn of it, he reasoned as follows. There are only two kinds of beings, minds and bodies. Roundness is not the mode of a mind. It is therefore the mode of a body.

We discover by simple perception, then, without any reasoning and merely by applying the mind to the idea of extension, that roundness and every other figure is a modification belonging to body, and that pleasure, pain, heat, and all other sensible qualities are not modifications of body. Every question about what does or does not belong to extension can be answered easily, immediately, and boldly, merely by considering the idea representing it. Everyone agrees on this subject, for those who say that matter can think do not believe that it has this faculty because it is extended; they agree that extension, taken precisely as such, cannot think.

But there is no agreement on what should be believed about the soul and its modifications. There are people who think that pain and heat, or at least color, do not belong to the soul. You even make a fool of yourself before certain Cartesians if you say that the soul actually becomes blue, red, or yellow, and that the soul is painted with the colors of the rainbow when looking at it. There are many people who have doubts, and even more who do not believe, that when we smell carrion the soul becomes formally rotten, and that the taste of sugar, or of pepper or salt, is something belonging to the soul. Where, then, is the clear idea of the soul so that the Cartesians might consult it, and so that they might all agree on the question as to where colors, tastes, and odors are to be found?

But even if the Cartesians should agree on these difficulties, we could not conclude from their agreement that they have a clear idea of the soul. For if they agree finally that it is the soul that is actually green or red when we see greenness or redness, they will do so only as a result of lengthy arguments. They will never see it through simple perception; they will never arrive at this by consulting the supposed idea of the soul, but rather, by consulting the idea of body. They will maintain that sensible qualities belong to the soul only because these qualities do not belong to extension, of which they have a clear idea. They will never convince anyone of this whose insufficiency of mind precludes complex perceptions or reasoning, or rather, anyone who does not stop to consider the clear idea of body and who confuses everything. There will always be peasants, women, children, and perhaps savants and doctors, who will have doubts about it. But women and children, the learned and the ignorant, the most enlightened and the most dense, have no difficulty in conceiving through the idea they have of extension that it can have all sorts of figures. They clearly understand that extension is incapable of pain, taste, odor, or of any sensation, when they faithfully and attentively consider the single idea that represents it. For there is no sensible quality contained in the idea that represents extension.

It is true that they might have doubts as to whether or not body is capable of sensation, or of receiving some sensible quality; but this is because they understand body as something other than extension, and because they have no idea of body taken in this sense. But when Descartes, or the Cartesians to whom I am speaking, assert that we know the soul better than body, they mean by body only extension. How, then, can they maintain that we know the nature of the soul more clearly than that of body, since the idea of body or extension is so clear that everyone agrees on what it contains and what it excludes, whereas the idea of the soul is so confused that the Cartesians themselves constantly dispute as to whether modifications of color belong to it.

''We know the nature of a substance more distinctly,'' say these philosophers following Descartes,[a] ''as we know more of its attributes. Now there is nothing whose attributes we know more of than our mind, because as many attributes as we know in other things can be counted in the mind from the fact that it knows them. And thus its nature is better known than the nature of any other thing.''

But who does not see that there is quite a difference between knowing through a clear idea and knowing through *consciousness*? When I know that twice two is four, I know this very clearly, but I do not know clearly what it is in me that knows it. I sense it, granted; I know it through consciousness or inner sensation. But I have no clear idea of it as I have of numbers, between which I can clearly discover relations. I can *count* that there are in my mind three properties: that of knowing that two times two is four, that of knowing that three times three is nine, and that of knowing that four times four is sixteen. If you wish, an infinity of properties in me can thus be counted, since these three properties are different from each other. But I deny that the nature of the things thus capable of being *counted* can be known *clearly*. To be counted, they need only be sensed.

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[a] In the passage just cited.

We can be said to have a clear idea of a being and to know its nature when we can compare it with others of which we also have a clear idea, or at least when we can compare the modifications of which the being is capable. We have clear ideas of numbers and of parts of extension because we can compare these things. We can compare two with four, four with sixteen and each number with every other. We can compare a square with a triangle, a circle with an ellipse, a square or a triangle with every other square or triangle, and we can thus clearly discover the relations between these figures and between these numbers. But we cannot compare our mind with other minds in order to discover clearly some relation between them. We cannot even compare the modes of our mind, its own perceptions. We cannot discover clearly the relation between pleasure and pain, heat and color, or to speak only of modes of the same kind, we cannot exactly determine the relation between green and red, yellow and violet, or even between violet and violet. We sense that the one is darker or more brilliant than the other, but we do not know clearly either by how much, or in what being darker or more brilliant consists. We therefore have no clear idea either of the soul or of its modifications, and although I see or sense colors, tastes, odors, I can say, as I have, that I do not know them through a clear idea, because I am unable to discover clearly their relations.

It is true that I can discover exact relations between sounds, that the octave, for example, is two to one, the fifth three to two, the fourth four to three. But I cannot know these relations through the sensation I have of them. If I know that the octave is two to one, it is because I have learned through experience that a given string sounds the octave when, having been plucked at full length, it is then plucked after having been divided into two equal parts. It is because I know that there are twice as many vibrations in an equal amount of time, or something like this. It is because the disturbances in the air, the vibrations of the string, and the string itself are things that can be compared through clear ideas, and because we know distinctly the relations that can obtain between the string and its parts as well as between the rates of different vibrations. But the sounds cannot be compared in themselves, or insofar as they are sensible qualities and modifications of the soul. We cannot know their relations in this way. And although musicians distinguish different consonances very well, this is not because they distinguish their relations through clear ideas. For them, the ear alone judges the difference in sounds; their reason knows nothing. But the ear cannot be said to judge through a clear idea or otherwise than through sensation. Even musicians, then, have no clear idea of sounds taken as sensations or modifications of the soul. Consequently, neither the soul nor its modifications is known through a clear idea, but only through consciousness or inner sensation.

Furthermore, we do not know what the soul's dispositions consist in which make it readier to act and represent objects to itself. We cannot even conceive what such dispositions could consist in. I say further that through reason we cannot ascertain whether the soul when separated from the body or taken in isolation from the body is capable of having any habits or memory. But how can we be ignorant of these things if the nature of the soul is better known than that of the body? We have no difficulty in seeing what constitutes the animal spirits' readiness to be distributed in the nerves in which they have already flowed many times. Or at least we have no difficulty in discovering that as the passages in the nerves become larger and their fibers relax in a certain way, the spirits can easily pass through them. But what could conceiveably increase the soul's readiness for action or thought? For my part, I admit that I understand nothing of this. In vain do I examine myself in order to discover these dispositions; I have no answer for myself. I cannot enlighten myself on the matter, even though I have a very lively sensation of the readiness with which certain thoughts are excited in me. And if I did not have good reasons that lead me to believe that I do in fact have such dispositions (although I am not aware of them in me), I would judge by consulting only inner sensation that my soul has neither habits nor a spiritual memory. But our hesitation in this is a sure sign that we are not as enlightened as we might say, for doubt does not agree with evidence and clear ideas.

It is certain that the most enlightened man does not know with evidence whether he is worthy of love or hatred, as the wise man says.[a] The inner sensation we have of ourselves cannot decide. Saint Paul says that his conscience gives him no reproach,[b] but he does not claim that because of this he is justified. He claims, on the contrary, that this does not justify him and that he dares not judge himself because it is the Lord who judges him. But given that we have a clear idea of order, if we also had a clear idea of the soul through our inner sensation of ourselves, we would know clearly whether the soul conformed to order; we would know whether we are righteous or not. We would even be able to know with precision all its inner dispositions toward good and evil when having a sensation of them. But if we could know ourselves as we are, we would not be so liable to presumption. And it is likely that Saint Peter would not have said to his Master, whom he was soon to deny,[c] "Why cannot I follow you now, I will give my life for you, Animam meam pro te ponam." For with an inner sensation of his own strength and good will, he would have been able to see clearly whether he had the strength or courage to conquer death, or rather the insults of a maid and a few servants.

If the nature of the soul is better known than the nature of any other things, if the idea we have of it is as clear as the idea we have of the body, then I ask only this: how is it that there are so many people who confuse the two? Is it possible to confuse two entirely different clear ideas? Let us do justice to everyone. Those who are not of our opinion are as reasonable as we, they have the same ideas of things, they participate in the same reason. Why, then, do they confuse what we disinguish? Have they on any other occasion ever confused things of which they have clear ideas? Have they ever confused two different numbers? Have they ever taken a square for a circle? Yet the soul is more different from the body than a square is from a circle, for they are substances that agree in nothing, and yet these people confuse them. There is, then, some difficulty in recognizing their difference. Their difference is not found by simple perception, and reasoning is required to conclude that the one is not the other. The idea of extension must be carefully consulted, and it must be seen that extension is not a mode of bodies but body itself (since it is represented to us as a subsisting thing and as the principle of everything we clearly conceive in bodies); and thus, since the modes of which a body is capable are in no way related to sense qualities, the subject of these qualities, or rather, the being of which these qualities are modes, must be very different from body. Such arguments must be produced in order to avoid confusing the soul with the body. But if we had a clear idea of the soul, as we do of the body, we certainly would not have to take such a roundabout way to distinguish it from the body. We could do so at a single glance, as easily as we see that a square is not a circle.

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[a] Eccles. 9:1.

[b] "Sed neque meipsum judico. Nihil enim mihi conscius sum: sed non in hoc justificatus sum: qui autem judicat me Dominus est." 1 Cor. 4:4.

[c] John 12:37.

I shall pause for no further proof that we do not know the soul or its modifications through clear ideas.[a] We come to realize this no matter how we look at ourselves, and I add this to what I have already said in the *Search after Truth* only because of the criticism it received from certain Cartesians. If this does not satisfy them, then let them show me this clear idea of the soul that, no matter how I try, I cannot find in myself.

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[a] You might see the ninth of the *Meditations chrétiennes*.

ELUCIDATION TWELVE

On the eighth chapter of the second part of the third book. Vague and general terms that signify nothing in particular. How to distinguish them from others.

In order to understand what I have said in several places, viz., that we do not explain things when we express them in terms from logic or by general ideas, it suffices to reflect that since everything that exists reduces to being or to modes of being, every term not signifying either of these things signifies nothing, and every term not signifying either of these things distinctly and in particular signifies nothing distinct. This appears to me very evident, but what is evident in itself is not so for everyone. We are accustomed to being dazzled with words and to dazzle others with them. All terms that do not offend the ear gain currency among men, and the truth enters so little into the affairs of the world that those who speak and listen ordinarily have no regard for it. The gift of speech is the greatest of talents, the language of the imagination is the surest of means, and a memory filled with incomprehensible terms will always appear with great display, whatever the Cartesians may say on the matter.

When men love only the truth, they will then be careful about what they say, they will carefully examine what they hear, they will scornfully reject terms devoid of sense, and they will apply themselves only to clear ideas. But when will men love only the truth? When they no longer depend on their bodies, when they no longer have any necessary relation to sensible objects, when they no longer corrupt each other, and when they faithfully consult the master who enlightens them in the secret recesses of their reason. But this will never happen in this life.

Yet not all men are equally indifferent to the truth. If some of them pronounce words without reflection, receive them without discrimination, attend only to what affects them, there are also others who work seriously to instruct themselves in the truth and to convince others of it. And it is mainly to the latter that I speak, for it is at their request that I decided to produce these Elucidations.

I say, then, that everything which is, whether it actually exists or not, and consequently everything intelligible, reduces to being and mode. By *being* I mean what is absolute, or what can be conceived alone and without relation to anything else. By *modes* I mean what is relative, or what cannot be conceived alone. Now there are two kinds of modes; some consist in the relation of the parts of some whole to some part of the same whole, the others consist in the relation of one thing to another that is not part of the same whole. The roundness of wax is a mode of the first sort, because its roundness consists in the equality of distance all the parts of the surface have from that part which is its center. The motion or the situation of the wax is a mode of the second sort, for it consists in the relation the wax has to bodies surrounding it. I am not speaking about motion taken as the motor force, for it is clear that this force is not and cannot be a mode of bodies, because however they are conceived to be modified, they cannot be conceived as having a motor force in them.

If it is certain that everything intelligible reduces to beings or modes, it is evident that every term signifying neither of these things signifies nothing, and that every term not signifying this or that being or mode is an obscure and confused term. And consequently we cannot clearly conceive what others say to us, nor what we say to them, unless we have distinct ideas of a being or mode answering to each of the terms they or we ourselves use.

Nonetheless, I agree that we can, and sometimes must, make use of terms that do not directly call up any distinct ideas. We can, because it is not always necessary to replace the defined by the definition, and because we usefully employ abbreviated expressions, although they are confused in themselves. And we are constrained to do so when we are obliged to speak of things of which we have no clear idea, and which we know only through the inner sensation we have of ourselves, as when we speak of the soul and its modifications. We need only take care not to use obscure and equivocal terms when we have clear terms or when those to whom we speak might derive a false idea from them. These things will be better understood with an example.

It is clearer to say that God created the world by His will than it is to say He did so by His *power*. The latter word is a term from logic; it evokes no distinct and particular idea in the mind, and it leaves room to imagine that the power of God might be something other than the efficacy of His will. We speak more clearly when we say that God forgives sinners in Jesus Christ than if we were to say that God pardons them through His *clemency* and *mercy*. These terms are equivocal; they give us some reason to think that God's clemency is perhaps contrary to this justice, that sin can go unpunished, that the satisfaction of Jesus Christ is not necessary, and other such things.

We often use these vague terms of imprecise meaning when we speak of the divine perfections; and this should not be condemned, because philosophical precision is not always necessary. But through criminal negligence and stupidity we so abuse these general expressions and draw from them so many false conclusions that although all men have the same idea of God and consider Him an infinitely perfect being, yet there is hardly an imperfection that was not attributed to Him during the age of idolatry, and He is often spoken of in a very unworthy manner—all this for failure to closely compare the things we say about Him with the idea representing Him, or rather with Him Himself.

Here is another example that comes to mind and is of some importance.

Those who claim that the prevenient delight or the grace of Jesus Christ is efficacious by itself and by its nature with regard to the consent of the will. I say with regard to the consent of the will, for undoubtedly it is efficacious[a] by itself with regard to the will; it always has the effect of moving it and leading it toward the good, because it makes it enjoy the good, and we always invincibly wish to be happy. Those, I say, who maintain that the grace of the Saviour is efficacious by itself with regard to the consent of the will, reply to the objection that this view destroys freedom and is contrary to the decision of the Council of Trent, which determined[b] that free will, moved by grace, can resist it or not consent to it if it wishes to do so. They reply, I say, that their view is not contrary to freedom, and that we have the power to resist the grace of Jesus Christ, but that we never resist it or that this power we have not to consent to it never has any effect. If you wish, they say, can you not jump out the window, cut off your nose, or scratch out your eyes? You have these and several other powers, but it is certain that neither you nor anyone else will use them. There are, then, many powers that will never have any effect. Such is the power, they say, that the grace of Jesus Christ leaves to free will. It is able not to consent to it if it so wills, but it will never so will.

To disclose the weakness of this reply, we have only to elucidate the word *power*, and remove the equivocation from it.

It is clear that we have the power to jump out the window only on the supposition that we have the power of willing to do so. Now, we cannot will anything without some motive appealing to the natural and invincible desire we have to be happy; for to will something is only to consent to the motive leading us to will it, and we must know or sense before consenting. If, then, we do not have the power of willing anything without a motive agreeing with the desire to be happy, we are far from having the power to jump out the window, considering the danger there is of maiming or killing ourselves, which we naturally regard as a great evil. Thus, when a man says that he has the power of throwing himself down if he wishes to do so, the word *power* signifies only that he has the power to move his body according to his desires, and he truly has this power. And when without hesitation he asserts that he will never jump out his window, it must mean that he will never do so out of sheer wantonness and without very pressing motives that he does not then foresee, such as the fear of being burned alive in his room, or being stabbed by his enemeies, because we can will nothing without a motive. Might one say that Saint Peter can now still deny his master if he wished to do so in order to conclude that there are some powers that do not and will never have any effect? He can do so if he wills to do so, but he cannot will to do so, nor even hesitate to will not to do so, because he has no motive for this and because he has invincible motives for being attached to his beloved master and his God.

But now that the soul is on trial in its body, and the life of man is and must be a continual struggle, because this is the time to gain merit through its cooperation with grace, can we say that when it leads us to perform some good work, concupiscence does not provide sufficient motive to leave the soul at least the power to suspend its consent, the freedom to think, the time to examine, especially if it is a good work we are not in the habit of practicing? Now, assuming we suspend it for a quarter-hour or longer than the delight of grace lasts, is it not evident that the grace will not have been efficacious by itself with regard to consent, although this same grace would have made the will consent had it immediately followed the impulse it inspired in it. When we suggest to a man that he throw himself down or scratch out his eyes, what motive would he have to suspend his consent in order to examine whether he will do so. But when grace leads someone to leave the world to become a religious, certainly he does not lack motive to examine and suspend consent. Although moved by grace, he has a true power, then, that only too often has its effect, whereas the other has only an imaginary power; and to respond to the clear and evident decision of the Council in the way I have just described is to take advantage of the equivocal term *power* and to be deceived or to wish to deceive others.

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[a] See the first of the four *Lettres* regarding those of Arnauld in the second volume of the *Recueil* of my replies. There, by attaching distinct and precise ideas to the terms of the question, I try to explain in what sense the grace of Jesus Christ is efficacious by itself.

[b] Sess. 6. can. 4.

I say that this decision is clear and evident, for the power decided upon by the Council, that of resisting or of not consenting to the actual impulse of grace, to the prevenient delight that actually moves the will, is the power to realise an act indicated in this power—very clearly indicated, I say. For *resisting* or *not consenting* are terms relative to the actual impulse that grace produces in the will. Certainly we cannot resist grace or temptation *in sensu diviso*, i.e., when grace or temptation are not actually moving the will, for this would be to resist nothing, to consent to nothing. In order for the will to be able actually to resist the impulse of grace, grace must actually be moving it. Thus, the decision of the Council is clear, unequivocal, and without need of explanation. For a power that cannot be exercised or that cannot realize any act is a power that can do nothing, and that consequently is nothing. And to say that free will moved by grace has the power not to consent to it, but that it is a contradiction that it should exercise its power, is to contradict the Council and oneself.

If the Council had said, he who consents to the impulse of grace has the power not to consent to it, then one would have grounds to make a distinction and say that he has this power, but that it is a contradiction that this power should realize its act of resistance to grace, because the will cannot consent and not consent at the same time. It is a contradiction that God should give and not give me a certain grace at the same time. It is also a contradiction that at the same time I should consent and not consent. But there is no contradiction if on the one hand God gives me His grace and at the same time I do not consent to it, unless it is because we assume that I cannot have any motive to refuse my consent, or that the act of my consent is not free and does not depend on me.

But it is especially in matters of physics that we take advantage of vague and general terms that do not call up distinct ideas of being or modes. For example, when we say that bodies tend toward their *center*, that they fall by their *gravity*, that they rise by their *levity*, that they move by their *nature*, that they are hard or fluid by themselves, that they successively change their *forms*, that they act by their *virtues, qualities, faculties,* and so on, we use terms signifying nothing, and all these propositions are absolutely false in the sense philosophers give them. There is no *center* in the sense ordinarily understood. The terms *gravity, form, nature* and the like call up the idea of neither a being nor a mode. They are terms devoid of sense, which wise people ought to avoid. ''Scientia insensati inenarrabilia verba,''[a] says Scripture. These terms are suited only for hiding the ignorance of counterfeit scholars, and for making the stupid and the skeptical believe that God is not the true cause of all things.

It seems to me that this is certain and easy to understand. Yet most men speak freely of all things without troubling themselves to examine whether the terms they use have a clear and exact meaning. There are even some authors who have composed several volumes in which it is harder than may be thought to locate some passage where they have understood what they have written. Thus, those who read a great deal and listen respectfully to the vague and general discourse of counterfeit scholars are in a very gross ignorance. And I do not see that they can be delivered from it unless they make and constantly renew the resolution never to believe anyone on his word or before having attached distinct ideas to the commonest words others use. For these terms are not clear, as is ordinarily imagined. They appear clear only on account of the continual use made of them, because we imagine we understand perfectly what we say or what we hear when we hear or say things we have said a hundred times, though we have never examined them.

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[a] Eccl. 21:21 [Eccl. 21:18].

ELUCIDATION THIRTEEN

On the conclusion of the first three books. That physicians and spiritual directors are absolutely necessary to us, but that on many occasions it is dangerous to consult them and to follow them.

To be sure, man before his sin had everything necessary for him to preserve his mind and body in a perfect state, and so had no need of either spiritual directors or physicians. He consulted the inner truth as the infallible rule of his duty, and his senses were so trustworthy that they never deceived him concerning the use he was supposed to make of the bodies surrounding him in order to preserve his own body.

But things are quite different after sin. We consult our passions much more than truth or the eternal law, and our senses are so disordered that by following them we sometimes lose life and health. Spiritual directors and physicians are absolutely necessary to us, and those who pretend to be clever enough to take care of themselves in all cases generally fall into gross errors that teach them a little too late that they follow a master who is none too wise.

Yet I believe I can say that sin has not so disordered all the soul's faculties that we cannot, in certain cases, consult ourselves, and that it often happens that we lose the life of the soul or the body because we appeal to physicians who lack expertise in their art and who do not know our temperament sufficiently, or to spiritual directors who are ignorant in religion and morals, and who do not thoroughly examine consciences to discover the obligations and dispositions of those consulting them.

What I said by way of conclusion to the first three books of the *Search after Truth* has led certain people to imagine I held that in order to preserve our health and life we should follow our senses and passions in everything, and that in order to learn our duty it is of no use to consult other men because we have as our master eternal Wisdom, who speaks to us clearly in the most secret recesses of our reason. And though I have never said or even thought that physicians and spiritual directors are of no use, certain people who are quick to judge and draw conclusions persuaded themselves that this was my opinion (perhaps because it was their own and because they did not so much consider man as he is now, as he was before sin). Here, then, is roughly what I think about this question.

Man can be considered in two states, in health and in sickness. If he is considered in a perfect state of health, it seems to me indubitable that his senses are much more useful for the preservation of health than his reason or the experience of the cleverest of physicians. No physician need be sought in order to know how much weight a man can carry, whether he ought to eat wood or stones, or whether he can cast himself into a precipice. His senses teach him in a simple and indisputable way what he must do in such cases, which are the most common, and this seems to me sufficient justification of what I said by way of conclusion to the first three books.

But this is not sufficient justification for what I thought, or for what I even said elsewhere:[a] *that our senses admirably acquit themselves of their duty, and conduct us in so proper and faithful a way to their end, that it seems to me they are wrongly accused of being corrupt or disordered.* For I have always believed that the soundness, precision, and admirable order found in our sensations in relation to the preservation of life are not consequences of sin but nature's first institution.

The objection is raised that this order is now upset, and that if we followed our senses, not only would we often eat poison, but we would almost always eat more food than we could digest.

But, as to poisons, I do not think that our senses ever lead us to eat them; and I believe that if, by chance, our eyes excite us to taste something poisonous, we would not find it to have the kind of taste that would make us swallow it, provided, however, that the poison was in its natural state. For there is a big difference between poisons as they are found naturally and poisoned meat, between raw pepper and peppered meat. Our senses lead us to eat poisoned meats, I agree. But they do not lead us to eat poisons. I do not even know whether they lead us to taste poisons, given that the poisons are in the state that God created them. For the scope of our senses is limited to the natural order of things as God has established it.

I also agree that our senses now lead us to eat too much of certain foods, but this is because they are not in their natural state. We would perhaps not eat an excess of wheat if we ground it with the teeth that were made for that purpose. But it is ground and sifted, kneaded and cooked, sometimes even with milk, butter, or sugar. It is also eaten with jams and different kinds of sauces that whet the appetite. Thus, it should not be surprising that our senses lead us to excess, when reason and experience combine to ambush and corrupt them.

The same is also true of flesh, which horrifies the senses when it is raw and bloody, as when seen after the animal has died a natural death. But men have taken it upon themselves to slaughter animals, to withdraw the blood, cook the flesh, season it, and after all this, they accuse their senses of corruption and disorder. Since they make use of their reason to prepare foods other than those with which nature provides them, I maintain that they must also use their reason to eat with moderation. And if cooks have found the art of making us eat old shoes in their stews, we must also make use of our reason and distrust these bogus meats that are not in the state that God created them. For God provided us with the senses only in relation to the natural order of things.

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[a] Bk. 1, ch. 5.

It must be noted further that our imagination and senses are to be suspected when we take food that is out of the ordinary. For if a man should come across a fruit that he himself had never eaten or had never seen anyone else eat, he would at first have a certain aversion and feeling of fear while tasting it. His imagination and senses would be naturally very alert to the taste he was experiencing. However hungry he was, he would eat very little of it the first time; and if the fruit should have some dangerous quality, it would be sure to create in him a certain repulsion. His machine would thus be disposed in such a way that he would not eat it again, and with his repulsion expressed by the look on his face, he would even prevent others from eating it. All this would or could take place in him without reason playing any role, for I am not speaking here about any help that reason or learning might provide. But since our friends take bad food, at least in relation to our temperament, we do likewise. For opinion guides our life, and example reassures us. We do not examine the effect that such food produces in us and we have no fears about eating to excess. But our senses do not play so great a role in this excess as we might believe.

It is true that there might be fruits whose taste deceives people who are most alert to the reports of their senses, but this certainly is very rare. It should not be definitely concluded from these particular cases that our senses are altogether corrupt, or that they ordinarily deceive us in the things concerning the body's welfare. Perhaps these fruits deceive our taste because our organ of taste has been altered by some unnatural food that we eat often. For it is certain that the very tasty meats we eat injure our tongue's fibers with their particles, which penetrate too deeply and destroy its delicacy and discrimination. The example of those who no longer find any taste in sauces is a proof of this. For if we find no flavor in wheat or in raw flesh, it is because our tongue has become insensible to those particles whose motion is more moderate.

But even assuming that there are fruits whose taste can deceive the most delicate senses still in their state of natural perfection, we must not believe that this is a result of sin, but only that in virtue of the very simple laws of nature one sense cannot discriminate among all kinds of meat. Furthermore, the defect in the senses would not be beyond remedy, because when mothers have a distaste for dangerous fruit, they communicate it to their children, not only when the children are in their womb, but also when they have been delivered into the world. For children eat only what is given them by their mothers, who impress upon them, mechanically and by the look on their face, the repulsion they have for fruits that are not good to eat. Consequently, through our senses, God has sufficiently provided for the preservation of our life, and nothing could be any better. Since order would have it that the laws concerning the union of body and soul should be very simple, they must be very general; and God ought not to have established particular laws for cases that hardly ever occur. In these instances reason must come to the aid of the senses, for reason can be of use in all things. But the senses are determined toward certain natural judgments that are the most useful that can be conceived of, as I have shown in the first book. Nonetheless, these judgments sometimes deceive us, because it is impossible that it should be otherwise without multiplying the very simple laws concerning the union of body and soul.

If man is considered in his present state of malady, it must be admitted that his senses often deceive him even in those things that are related to the preservation of his life. For when his body's equilibrium is disturbed, a great deal of irregular motion must be stirred up to his brain to the extent of the disturbance. Yet his senses are not so corrupt as is ordinarily thought; and God has so wisely provided for the preservation of his life through the laws concerning the union of body and soul that, although these laws are very simple, they are often sufficient to restore us to health. It is much safer to follow them than to make use of our reason or of certain physicians who do not carefully note the state in which they find their patients. For just as a wound closes and heals by itself when it is carefully kept clean, bound, and bandaged, and perhaps is licked as the animals do when injured, so our ordinary sicknesses soon disappear when we rest and do exactly as the sicknesses inspire us as if by instinct or sensation.

A man in fever, for example, finds that wine is bitter, and wine is also then harmful to him. The same man finds it pleasant-tasting when he is in health, and wine is then good for him. It even happens that wine is very helpful for sick people who find it agreeable, provided that the taste they have for it is not an effect of their habit of drinking wine, and that the desire excited in them is caused by the actual disposition of their body. Thus, it cannot be doubted that the senses should be consulted in order to know, even in sickness, the way to regain health. The following is what I think must be done.

Sick people must be very alert to certain secret desires that the actual disposition of their body sometimes excites in them, and they must be especially careful that these desires are not the result of some previous habit. To this end, they must, as it were, give free rein to their imagination, or without thinking about anything that might restrain it, observe their inclinations and determine whether their inclinations are a result of the actual state of their body. If this is the case, then they must follow them, but with great restraint. For it is very difficult to be certain whether these secret inclinations are the result of their present bodily state, and in this regard it is sometimes worthwhile to consult someone of experience. If he yields to his imagination, as I have just described, and nothing comes to mind, the patient must fast and remain quiet. For fasting apparently will arouse a certain desire, or will dissipate the humors making him sick. But if the sickness increases in spite of rest and fasting, it is then necessary to rely on experience and physicians. Everything must be told exactly to a physician of some expertise who if possible knows our temperament. The beginning and the ensuing progress of the sickness, and our state before the sickness, must be clearly explained to him so that he might relate his experience and reason to him whom he would cure. And although the physician might prescribe bitter medicines that are actually kinds of poison, the patient must take them, because experience shows that these poisons usually do not remain in the body, and that they sometimes flush out the bad humors causing our disease. At this time reason, or rather experience, must overrule the senses, provided that our distaste for the prescribed medicine is not something new. For if our aversion toward it were excited simultaneously with the sickness, this would be a sign that the prescribed medicine was of the same nature as the corrupt humors causing the sickness, and thus it would perhaps only increase them.

Nevertheless, I think that before venturing to take medicines that are strong or very distasteful, it would be appropriate to begin with remedies that are milder or more natural, as, for example, drinking a great deal of water, or taking a mild emetic if we have lost our appetite and if vomiting is not found too difficult. Water taken in great quantities can liquify humors that have been condensed by heat, aid the circulation of blood into all parts of the body, drown out the ferments causing sickness, and desalinate both the blood and humors or eliminate the bitterness in them. And when emetics cleanse the stomach, they prevent the food we have eaten from further corrupting it and from supporting intermittent fevers. I need not pause to show the worth of these remedies. I am of the opinion, then, that the advice of wise physicians should be followed—physicians who do not progress too quickly, who do not expect too much from their remedies, and who are not too quick to make prescriptions, because for every remedy that does some good, there are always several others that have just the opposite effect. Because those suffering from some illness are impatient, and because it is advantageous neither to the prestige of physicians nor to the profit of apothecaries to see sick people without prescribing anything for them, physicians visit too little and prescribe too much. Thus, when you are sick, you ought to ask your physician not to take any chances, to follow nature and, if he can, to support it. You should make it clear that you are reasonable and patient enough not to fault him if he sees us often without healing us; for in these cases, to avoid aggravating the illness is sometimes a great deal.

I think, then, that we must appeal to physicians and not refuse to obey them if we wish to preserve our life. For though they cannot guarantee our health, they can sometimes help a great deal because of the constant experience they have with different illnesses. They know very little with precision, but they always know more than we do; and provided that they carefully take note of our temperament, of the symptoms of the illness, and of the inner sensation we have of ourselves, we should expect from them all the help that we can reasonably expect from men.

What has just been said about physicians can roughly be said of spiritual directors. In certain cases it is absolutely necessary to consult them, and generally it is useful to do so. But often it is of no use at all, and sometimes even very dangerous to consult them. I shall now explain and demonstrate these things.

It is ordinarily said that human reason is liable to error, but this contains an equivocation of which we are not wary enough. For it should not be imagined that the Reason man consults is corrupt, or that it ever deceives him when he consults it faithfully. I have said this before and I repeat it: only sovereign Reason makes us rational, only sovereign Truth enlightens us, only God speaks to us clearly and can teach us. We have but one true Master, Jesus Christ, our Lord, the eternal Wisdom, the Word of the Father in whom are all the treasures of the knowledge and wisdom of God; and it is impious to say that this universal Reason in which all men participate and by which alone they are rational, is liable to error or capable of deceiving us. It is not man's reason that seduces him but his heart, and it is not his light that prevents him from seeing but his darkness. It is not his union with God that deceives him, or even, in a sense, his union with the body, but his dependence upon the body, or rather, his desire to deceive himself. It is his desire to enjoy the pleasure of making judgments before bothering to conduct an examination. It is his desire to rest before reaching the place in which the truth rests. I have examined the cause of our errors with greater precision in several places of the *Search after Truth*, and I here assume what I have said about it.

I therefore say that it is of no use to consult spiritual directors when it is certain that the Truth is speaking to us, and it is certain that the Truth is speaking to us when evidence is found in the responses made to our inquiries or to our mind's attentions. I mean the evidence found in them, the evidence light produces, and not that false evidence produced in us by the imagination or passion. Thus, when we retreat within ourselves, we hear in the tranquillity of our senses and passions a word so clear and intelligible that we cannot doubt it. We must submit to it without regard for the opinion of men. We must not take account of custom or listen to our secret inclinations, or defer too much to the so-called learned. We must not be seduced by false appearances of piety, or be disheartened by the opposition of those who are ignorant of the mind animating them. Rather we must suffer their insults with patience, without condemning their intentions or despising the people themselves. In all simplicity, we must rejoice in the light of truth that illuminates us, and although its replies might condemn us, we must prefer them to all the subtle distinctions the imagination invents in order to justify the passions.

Any man, for example, who knows how to retreat within himself and who quiets the din of his senses and passions discovers clearly that the entire impulse of love that God places in us must center upon Him, and that God Himself cannot dispense us from the obligation we have of loving Him in all things. It is clear that God cannot cease acting for Himself, nor create or preserve our will for it to will anything other than Himself, or to will anything other than what He Himself wills. For I do not see how it can be imagined that God can will that we love most what is least worthy of love, or that we should love supremely, or as our end, what is not supremely worthy of love.

I realize that men who consult their passions instead of order can easily imagine that God has no other rule for His volitions than His volitions themselves, and that if God follows some order, He does so precisely because He has willed and produced this order by a volition that is entirely free and indifferent in every way. There are people who think that no order is necessary and immutable by its nature and that the order or wisdom of God according to which He made all things, although the first of created things, is itself a created thing, created by a free volition of God and not begotten of His substance through the necessity of His being. But this opinion, which upsets all the foundations of morals by stripping the order and eternal laws dependent upon them of their immutability, and which overturns the entire edifice of the Christian religion by despoiling Jesus Christ or the Word of God of His divinity, still does not cast the mind into such darkness as to hide from it this truth: that God wills order. Thus, whether God's volitions create order or assume it, we clearly see when we retreat within ourselves that the God we worship cannot do what appears to us clearly contrary to order. As a result of this, given that order would have it that such time as we have, or the duration of our being, should be for Him who preserves us and that the impulse of our heart should unceasingly tend toward Him who unceasingly impresses it in us, and that our soul should labor with all its powers only for Him in virtue of whom it acts, God cannot dispense us from the commandment He gave us through Moses in the law [Deut. 6:5] and that He has reiterated for us through His Son in the gospel:[a] "You shall love the Lord your God with your whole heart, your whole soul, your whole mind and your whole strength."

But because order would have it that every righteous person should be happy and every sinner miserable, that every action conforming to order or every impulse of love toward God should be rewarded, and that every action contrary to order or every impulse of love not tending toward God should be punished, it is clear that every man wishing to be happy must unceasingly strive after God and must recoil from every obstacle in his path or anything that diminishes his impulse toward his true good. For this he has no need of a spiritual director, for when God speaks, men must be silent. And when we are absolutely certain that our senses and passions play no role in the responses we hear in the most secret recesses of our reason, we must always listen to these responses respectfully and submit to them.

Should we want to know whether to go to a ball or a play, whether in conscience we can pass a large part of the day at games and in useless conversations, whether certain transactions, studies, or occupations agree with our obligations, let us then retreat within ourselves, silence our senses and passions, and then see in the light of God whether we can perform such an action for God. Let us beseech Him who is the way, the truth, and the life, in order to know whether the path we are following does not lead us to death, and whether we have reason to believe (since God is essentially just and necessarily obliged to punish anything inconsistent with order and to reward anything agreeing with it) that we are going to increase or ensure our happiness through the action we would perform.

If the love of God inclines us to go to a ball, let us go then. If in order to gain heaven we must gamble, let us gamble then, night and day. If, in our occupation, we have the glory of God in view, let us continue in it. Let us do all these things joyously, for our reward in heaven will be great. But if, after having carefully examined our essential obligations, we clearly see that neither our being nor its duration belong to us and that we are performing an unjust act that God cannot fail to punish when our only concern is to pass the time pleasantly. If our Lord and Master Jesus Christ, who purchased us with His blood, reproaches us in very clear and intelligible fashion for our unfaithfulness and ingratitude because we are living according to the flesh and the world, because we are leading a soft and voluptuous life, or because we follow custom and opinion, let us then give ourselves up to his voice and let us not harden our hearts; let us not look for spiritual directors who comfort and reassure us against these reproaches and who conceal with pleasing clouds the light that wounds and penetrates us.

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[a] "Diliges Dominum Deum tuum ex toto corde tuo, & ex tota anima tua, & ex tota mente tua, & ex tota virtute tua." Mark 12:30.

When one blind man leads another, says the Gospel [Math. 15:14], both fall into the precipice. But if the blind man who lets himself be led falls with him who leads, if he is not excused by God, will He excuse someone who sees clearly but lets himself be led by a blind man because the blind man leads him pleasantly along the road of his inclinations? These voluntarily blind men should know that God, who never deceives, allows these seducers to be in order to punish the corrupt hearts of those who seek to be seduced, that blindness is a punishment for sin although it is often a cause of it, and that he who has refused to listen to eternal Wisdom (which speaks to him only for his own good) justly ends by being corrupted by men whose deceit is as dangerous as their flattery is pleasant.

I grant that it is difficult to retreat within oneself, to silence one's senses and passions, and to decide whether it is God or our body speaking to us. For we often take the effects of sensation for the certainity of reason, and because of this, it is often necessary to consult spiritual directors. But our Master is to be valued more than prompters. We must begin by consulting God, and it is not always necessary to consult spiritual directors, for in many cases what we must do is seen with ultimate evidence and complete certainty. It is then even dangerous to consult them, unless we do so with complete sincerity and in a spirit of humility and obedience, for these attitudes require that God not allow us to be deceived or not allow us to err in any detrimental way.

When it is appropriate to consult a spiritual director, one must be chosen who knows religion, respects the gospel, and has some knowledge of man. Care must be taken that worldliness has not corrupted him, that friendship has not left him soft and complacent, and that he neither fears nor hopes anything from us. One in a thousand must be chosen, says Saint Theresa, who, as she herself says, thought herself lost through the fault of a foolish spiritual director.

The world is full of deceivers, those of good faith as well as others. Those who are our friends seduce us through complacence, those who are below us please us out of respect or fear, those who are above us do not attend to our needs because of contempt or unconcern. In addition, everyone gives us advice according to the reports we give them of what goes on within us, and we never fail to present ourselves in our best light, because we imperceptibly hide our afflictions when they cause us shame. We often deceive those directing us in order to deceive ourselves, for we pretend to be safe while following them. They lead us where we wish to go, and in spite of our light and the secret reproaches of our reason, we try to convince ourselves that we act out of obedience. We deceive ourselves, and God permits us to do so, but we do not deceive Him who fathoms the depths of our heart; and though we may close our ears as tightly as we can to the voice of inner truth, because sovereign Truth reproaches us by abandoning us to ourselves, we are still aware that it lights our darkness and reveals the strategems of our self-love.

It is clear, then, that Reason must be consulted for the health of the soul, just as the senses must be consulted for the health of the body; and that when, after being consulted as carefully as possible, Reason gives no clear reply, it is necessary to rely on spiritual directors, just as physicians must be relied on when the senses fail us. But this must not be done indiscriminately, because unenlightened spiritual directors can sometimes bring death to our soul, just as inexpert physicians can bring death to our body.

Since I am not giving the complete account that might be provided of the rules for choosing and making proper use of spiritual directors and physicians, I ask that my opinions be viewed fairly and that it not be imagined that I eschew all possible help from other men. I realize that it is a particular blessing to submit one's opinions to wise and enlightened people, and I should think that the general rule, that one must die according to the rules, is better for the common man than any I might propose for the preservation of life.

But because it is always worthwhile to withdraw into oneself, to consult the gospel and to listen to Jesus Christ (whether he speaks to our mind or heart directly, or through faith to our eyes and ears), I thought I could say what I did, for our spiritual directors deceive us when what they tell us is contrary to what faith and reason teach us. And since we honor God with our belief that His works have everything necessary to their preservation, I thought I could show men that their corporeal machine is constructed in so remarkable a way that it can find what is necessary to its preservation more easily and often more safely by itself than through science or even the experience of the most skillful of physicians.

ELUCIDATION FOURTEEN

On the third chapter of the fifth book. That love is different from pleasure and joy.

The mind often confuses very different things when they occur at the same time and are not altogether contrary. In this work I have produced several examples of this because it is mainly in this that our errors are to be found with regard to what takes place in us. Since we have no clear idea either of what constitutes the nature or essence of our soul, or of any of the modifications of which it is capable, it often happens that entirely different things need only occur in us at the same time in order for us to confuse them, for we easily confuse what we do not know through a clear and distinct idea.

Not only is it impossible to know clearly what constitutes the difference between things that take place in us at the same time, but it is even difficult to know that there is a difference between them. To do so, we must turn away and withdraw into ourselves, not to relate them to good or evil, which we can easily do, but to consider ourselves from a bare and abstract point of view, which we can do only with a great deal of difficulty and distraction.

We have no difficulty in understanding that the roundness of a body is different from its motion. And although we know through experience that a ball on a flat surface cannot be pushed without being moved, and that thus motion and roundness are found together, nonetheless, we do not confuse the two because we know motion and figure through very clear and distinct ideas. But such is not the case with pleasure and love, which are almost always confused. Our mind becomes mobile, as it were, through pleasure, just as a ball does through roundness; and because it is never without an impression toward the good, it immediately sets itself in motion toward the object causing or seeming to cause this pleasure. As a result, this impulse of love occuring in the soul while it feels the pleasure suffices for it to confuse its pleasure with its love because it has a clear idea of neither its love nor its pleasure as it does of some figure or an instance of motion. Because of this, some people believe that pleasure and love are not different and that I make too many distinctions in each of our passions.

But in order to show clearly that pleasure and love are two very different things, I shall distinguish two kinds of pleasure. There is the pleasure that precedes reason such as pleasant sensations, and they are ordinarily called bodily pleasures. Then there are those that precede neither the senses nor reason, and these are called pleasures of the soul. Such would be the joy excited in us as a consequence of the clear knowledge or the confused sensation we have that some good has happened or will happen to us.

For example, a man tasting a fruit with which he is not familiar feels pleasure in eating it if the fruit is nourishing. This pleasure is prevenient, for since he perceives it before knowing that the fruit is good for him, it is clear that this pleasure precedes his reason. A hunter who is hungry expects to find, or actually does find, something to eat; he actually experiences joy. Now, this joy is a pleasure that follows the knowledge he has of his present or future good.

It is perhaps clear from this distinction between pleasure that follows reason and pleasure that precedes it, that there is no pleasure that is not different from love. For the pleasure that precedes reason certainly precedes love, since it precedes all knowledge, whereas some knowledge is presupposed by love. And joy, on the contrary, or pleasure that presupposes knowledge also presupposes love, since joy presupposes the confused sensation or clear knowledge that we possess or will possess of what we love. For if we possessed something for which we had no love, we would receive no joy from it. Thus, pleasure is quite different from love because the pleasure that precedes reason precedes and causes love, and the pleasure that follows reason necessarily presupposes love as the effect presupposes its cause.

Although we cannot clearly know the nature of prevenient pleasure because we have a clear idea neither of our soul nor of its modifications, nonetheless, if we pay close attention to the inner sensation we have of it, we shall see that this kind of pleasure is but a pleasant perception of some object, a perception produced in the soul by the idea affecting it. Now, there is a big difference between the soul's perceptions on the one hand and its impulses and love on the other. Whoever touches a burning coal feels pain only because when his finger is burned the idea of his finger affects his soul with an unpleasant sensation; but the aversion excited by this perception is always very different from it, although the former naturally follows the latter. Thus, natural love is quite different from prevenient pleasure, although it always accompanies it.

This is even more evident with regard to voluntary love. For if prevenient pleasure were the same thing as love, there would never be any pleasure without love or love without pleasure, for a thing cannot be without itself. Yet a Christian voluntarily loves his enemy, and a well-brought-up child loves his father, however unreasonable or vexing he might be. The perception of their duty, the fear of God, the love of order and justice, make them love not only without pleasure but even with a kind of dread people whom they find altogether unpleasant. I grant that they sometimes feel pleasure or joy when they think they are performing their duty, or when they hope to receive their just reward. But this pleasure is clearly very different from the love they have for their father, although it might be the motive for it.

It is also quite certain that habitual love is different from pleasure, for this love continues in us during distractions and during sleep. Pleasure certainly subsists in the soul only as long as it makes itself felt by it. Thus, given that habitual love or charity reside in us without pleasure or delight, it cannot be maintained that pleasure and love are but the same thing.

As pleasure and pain are contraries, if pleasure were the same thing as love, pain would not be different from hatred. Now, it is clear that pain is different from hatred, for the former often subsists without the latter. A man, for example, who is suddenly injured suffers a real and piercing pain, but he has no hatred; for he does not even know the cause of his pain or the object of his hatred, or rather, since the cause of his pain does not deserve hatred, it cannot arouse it. Thus, he does not hate the cause of his pain, although his pain leads him or disposes him to hatred. It is true that the man hates his pain, for pain deserves hatred; but the hatred of pain is not pain, it presupposes pain. The hatred of pain does not deserve hatred as does pain. It, on the other hand, is very pleasant, for we take pleasure in hating pain as we have just the opposite feeling when suffering pain. Pain, then, is not hatred, and pleasure, which is the contrary of pain, is not love, which is the contrary of hatred. And consequently, the pleasure that precedes reason is not the same thing as love. I shall now likewise prove that joy, or the pleasure that follows reason, is distinct from love.

As joy and sadness are contraries, if joy were the same thing as love, sadness would not be different from hatred. Now, it is clear that sadness is different from hatred, for the former sometimes subsists without the latter. For example, a man has the ill fortune to be deprived of certain necessities—this is enough to cause in him a certain sadness; but it cannot excite hatred in him, whether because there is no cause of his deprivation or because the cause does not deserve hatred and so cannot arouse it. True, the man hates the privation of the good he loves; but it is clear that this kind of hatred is really love, because the man hates the privation of good only because he loves good. And since fleeing from the privation of good is to tend toward good, it is clear that the impulse of his hatred is not different from the impulse of his love. Thus, given that his hatred, if he has any, is not contrary to love, whereas sadness is always contrary to joy, it is clear that this sadness is not his hatred and consequently, joy is different from love. Finally, it is clear that we are affected by sadness due to the presence of some object we hate, or rather due to the absence of some object we love. Thus, sadness presupposes hatred or, rather, love, but it is very different from these two things.

I realize that Saint Augustine asserts that pain is an aversion conceived by the soul due to the fact that the body is not disposed as it would wish, and that he often confuses delight with charity, pleasure with joy, pain with sadness, pleasure and joy with love, and pain and sadness with aversion or hatred. But there is every likelihood that the holy doctor said all these things in the ordinary language of the common man, who confuses most of the things that simultaneously take place in him. Or perhaps he just did not examine these things in a precise or philosophical enough way. Yet I think I can and must say that it seems to me these things must be carefully distinguished in order to explain clearly and unequivocally many of the questions that Saint Augustine dealt with. For even those whose opinions are completely contrary are accustomed to appeal to the authority of this great man because of the different interpretations provided by his expressions, which are not always precise enough to reconcile people perhaps more interested in dispute than agreement.

ELUCIDATION FIFTEEN

On the third chapter of the second part of the sixth book. Concerning the efficacy attributed to secondary causes.

Since the sin of the first man, the mind constantly spreads itself externally; it forgets itself and Him who enlightens and penetrates it, and it lets itself be so seduced by its body and by those surrounding it that it imagines finding in them its perfection and happiness. God, who alone is capable of acting on us, is now hidden to our eyes; His operations contain nothing sensible, and although He produces and conserves all beings, the mind, which so arduously seeks the cause of all things, has difficulty in recognizing Him, although it encounters Him at every moment. Some philosophers prefer to imagine a *nature* and certain *faculties* as the cause of the effects we call natural, than to render to God all the honor that is due His power; and although they have neither a proof nor even a clear idea of this nature or these faculties, as I hope to show, they prefer to speak without knowing what they say and to respect a purely imaginary power, than to make any effort of mind to recognize the hand of Him who does everything in all things.

I cannot help believing that one of the most deplorable consequences of Original Sin is that we no longer have any taste or feeling for God, or that we experience and encounter Him only with a kind of horror or fear. We should see God in all things, sense His power and might in all natural effects, admire His wisdom in the marvelous order of creatures—in a word, we should adore only Him, fear and love only Him in all His works. But there is now a secret opposition between man and God. Feeling himself a sinner, man hides, flees the light, fears encountering God and prefers to imagine in the bodies surrounding him a blind nature or power that he can master and without remorse use toward his bizarre and disordered intentions, than to find in them the terrible power of a just and holy God who knows all and who does all.

I grant that there are many people who through a principle different from that of the pagan philosophers follow their opinion on *nature* and secondary causes. But I hope it will be seen from the following discourse that they yield to this opinion only through a prejudice from which it is almost impossible to deliver oneself without the aid that can be drawn from the principles of a philosophy that has not always been sufficiently known. For it is apparently this which has prevented them from declaring themselves in favor of the opinion I think ought to be held.

There are many reasons preventing me from attributing to *secondary* or *natural* causes a force, a power, an efficacy to produce anything. But the principal one is that this opinion does not even seem conceivable to me. Whatever effort I make in order to understand it, I cannot find in me any idea representing to me what might be the force or the power they attribute to creatures. And I do not even think it a temerarious judgment to assert that those who maintain that creatures have force and power in themselves advance what they do not clearly conceive. For in short, if philosophers clearly conceived that secondary causes have a true force to act and produce things like them, then being a man as much as they and participating like them in sovereign Reason, I should clearly be able to discover the idea that represents this force to them. But whatever effort of mind I make, I can find force, efficacy, or power only in the will of the infinitely perfect Being.

In addition, when I think about the different opinions of philosophers on this subject, I cannot doubt what I am proposing. For if they clearly saw what the power of creatures is, or what in them truly has this power, they would all agree in their opinion about it. When people who have no special interest preventing them from agreeing cannot agree, it is a sure sign that they have no clear idea of what they are saying and do not understand each other, especially if they are disputing about subjects that are not complex or difficult to discuss, such as the present question, for it would not be very difficult to resolve it if man had some clear idea of a created power or force. Here then are some of their views so that you might see how little they agree with each other.

There are some philosophers[a] who assert that secondary causes act through their matter, figure, and motion, and these philosophers are right in a sense; others assert that they do so through a *substantial form*; others through accidents or *qualities,* and some through *matter* and *form;* of these some through *form* and *accidents*, others through certain *virtues* or *faculties* different from the above. There are some who maintain that the substantial form produces forms and the accidental form accidents, others that forms produce other forms and accidents, and others, finally, that accidents alone are capable of producing accidents and even forms. But it should not be imagined that those who say, for example, that accidents can produce forms through the virtue they have received from the form to which they are joined understand this in the same way. Some would have it that these accidents are but the very power or virtue of the substantial form; others that these accidents incorporate the influence of the form and thus act only through its virtue; and others, finally, that they are only instrumental causes. But these last are not yet in total agreement among themselves about what should be understood by instrumental cause, nor what the virtue is that it receives from the primary cause. Philosophers do not even agree about the action by which secondary causes produce their effects.[a] Some of them claim that *causality* must not be produced, for it is what produces. Others would have them truly act through their *action*; but they find such great difficulty in explaining precisely what this action is, and there are so many different views on the matter that I cannot bring myself to relate them.

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[a] For the most extraordinary of these views, see Suarez's *Metaph.* Disp. 18. sec. 2 & 3; Scotus, in 4 *Sent.* Dis. 12.1. D. 37.2. D. 17; LaPalud, in 4 *Sent.* D. 12. Q. 1. art. 1; Pereira, 8 Phy. ch. 3; *Conimbricenses* on Aristotle's physics, and several others cited by Suarez.

There you have a great variety of views, although I have not related those of the ancient philosophers, or those who were born in very distant countries. But you can judge well enough that they no more entirely agree among themselves on the subject of secondary causes than those of whom I have just spoken. Avicenna, for example, does not believe that corporeal substances can produce anything but accidents. And here[b] is his system as related by Ruvio. He claims that God immediately produces a very perfect spiritual substance, that this substance produces another, less perfect substance, and this substance a third, and so on, till the last, which produces all corporeal substances, and the corporeal substances produce the accidents. But since he was unable to understand how corporeal substances,[c] which cannot penetrate each other, should be capable of altering each other, Avicebron claims that only minds are capable of acting on bodies because only they can penetrate them. For as these gentlemen did not accept the void or the atoms of Democritus, and as Descartes's subtle matter was not sufficiently known to them, they did not join the Gassendists and the Cartesians in the view that there are bodies small enough to enter the pores of those that appear hardest and most solid.

It seems to me that this diversity of views gives us the right to view men as often talking about things they do not know, and that since the power of creatures is a fiction of the mind of which we naturally have no idea, it is fancy that leads everyone to imagine it.

It is true that in all times this power has been recognized as real and true by most men, but this certainly has been without proof—I do not say without demonstrative proof, I say without proof capable of making any impression on an attentive mind. For the confused proofs that are based only on the deceiving testimony of the senses and imagination should not be accepted by those who make use of their reason.

Speaking of what is called *nature*, Aristotle[d] said that it is ridiculous to wish to prove that natural bodies have an inner principle of their motion and rest, because, he says, this is a thing known by itself. Nor does he doubt that a ball that collides with another has the force to set it in motion. This is the way it appears to the eyes, and that is enough for this philosopher; for he almost always follows the testimony of the senses and rarely that of reason, and he is indifferent as to whether that testimony be intelligible or not.

[a] See Fonseca's *Metaph*. q. 13. sec. 3; Soncinas's and Javelle's on the same question.

[b] Ruvio, book 2. ph. tract. 4. q. 2.

[c] See Suarez Disp. 18. sec. 1.

[d] Ch. 1. of bk. 2. of his *Physics*.

Those who contest the view of certain theologians who have written against secondary causes say, as did Aristotle, that the senses convince us of their efficacy; this is their first and chief proof. It is clear, they say,[a] that fire burns, that the sun illuminates, and that water cools; one must be a fool to doubt these things. The authors of the opposite view, says the great Averreos, are out of their minds. Almost all the Peripatetics say that those who deny this efficacy must be convinced through sensible proofs and must thus be obliged to admit that they are capable of being acted upon and hurt. This is a judgment that Aristotle[b] has already pronounced against them, and we should execute it.

But this alleged demonstration is pitiful. For it shows the weakness of the human mind, and it shows that even philosophers are infinitely more sensuous than they are rational. It shows that those who glory in seeking the truth do not even know what they must consult to learn of it, whether it is the sovereign Reason, who never deceives and who always discloses things as they are in themselves, or whether it is the body, which speaks only in self-interest and which discloses things only in relation to the preservation and convenience of life. For in the end, what prejudices shall we not justify if we take the senses as judges, to which practically all prejudices owe their origin, as I have shown in the *Search after Truth*.

When I see one ball strike another, my eyes tell me, or seem to tell me, that the one is truly the cause of the motion it impresses on the other, for the true cause that moves bodies does not appear to my eyes. But when I consult my reason I clearly see that since bodies cannot move themselves, and since their motor force is[c] but the will of God that conserves them successively in different places, they cannot communicate a power they do not have and could not communicate even if it were in their possession. For the mind will never conceive that one body, a purely passive substance, can in any way whatsoever transmit to another body the power transporting it.

When I open my eyes, it seems clear to me that the sun is brilliant with light, that not only is it visible by itself but that it makes all the bodies surrounding it visible, that it covers the earth with flowers and fruits, gives life to animals, and, penetrating by its heat even to the bowels of the earth, produces stones, marble, and metals. But when I consult Reason, I see nothing of all this; and when I consult it faithfully, I clearly recognize that my senses seduce me, and that it is God who does everything in all things. For since I know that all the changes that occur in bodies have no other principle than the different communications of motion that take place in both visible and invisible bodies, I see that it is God who does everything, since it is His will that causes, and His wisdom that regulates, all these communications.

I assume that locomotion is the principle of generation, corruption, alteration, and generally of all the changes that occur in bodies; this is now an opinion that is

[a] See Fonseca, Ruvio, Suarez, and the others already cited.

[b] Bk. 1. of the *Topics*, ch. 1.

[c] I have proved this truth at greater length in the seventh *Dialogue on Metaphysics* and elsewhere. See also the fifth and sixth *Meditations chrétiennes*.

well enough received among the learned. But whatever view is held on this, it makes no difference. For it seems easier to conceive that one body pushes another when it collides with it than it is to understand that fire produces heat and light and that it draws from the potentiality of matter a substance that was not there beforehand. And if God must be recognized as the true cause of the different communications of motion, *a fortiori* we must judge that only He can create and annihilate real qualities and substantial forms. I say *create* and *annihilate*, because it seems to be at least as difficult to draw from matter a substance that was not there, or to introduce it without it being there, as it is to create or annihilate it. But I do not pause over terms; I make use of these only because there are no others I know of that clearly and unequivocally express the changes that philosophers assume are constantly occuring through the power of secondary causes.

I find some difficulty in relating here the other proofs that are ordinarily given of the power and efficacy of natural causes, for they seem so weak to those who resist prejudices and who prefer their reason to their senses, that it does not seem likely they could have persuaded reasonable people. Nevertheless, I relate and answer them because there are many philosophers who use them.

First Proof

If secondary causes did nothing, say Suarez, Fonseca, and some others,[a] we could not distinguish living things from those not living, for neither of them would have an inner principle of their actions.

Reply

I reply that men would still have the same sensible proofs that have convinced them of the distinction they make between living things and those not living. They would still see animals perform certain actions such as eating, growing, crying, running, jumping, and so forth, and they would see nothing similar in stones. And it is this alone that has caused ordinary philosophers to believe that beasts are alive and stones not. For it should not be imagined that they know through a clear and distinct perception of the mind what the life of a dog is; their senses determine their decisions on this question.

If it were necessary, I would prove here that the principle of a dog's life is not very different from that of the motion of a watch. For the life of bodies, whatever they might be, can only consist in the motion of their parts; and it is not difficult to judge that the same subtle matter that produces the fermentation of blood and animal spirits in a dog, and which is the principle of its life, is no more perfect than that which gives motion to the mechanism of watches or which causes heaviness in the weights of clocks, which is the principle of their life, or to speak as do others, of their motion.

It is up to the Peripatetics to give to those whom they term Cartesians a clear idea of what they call *bestial life, corporeal soul, body that perceives, desires,*

[a] In *Metaph.* Disp. 18. sec. 1. assert. 12. In *Metaph. Arist.* quest. 7. sec. 2.

sees, senses and wills, and then we shall clearly resolve their difficulties if after this they continue to produce them.

Second Proof

We could recognize neither the differences nor the virtues of the elements. It could happen that fire would cool as water does; nothing would be of a fixed and determinate nature.

Reply

I reply that while nature remains as it is, i.e., while the laws of the communication of motion remain the same, it is a contradiction that fire should not burn or separate the parts of certain bodies. Fire cannot cool like water unless it becomes water, for since fire is only wood whose parts have been agitated with a violent motion by an invisible matter surrounding them, as is easy to demonstrate,[a] it is impossible for these parts not to communicate some of their motion to the bodies with which they collide. Now, since these laws are constant, the nature of fire and its virtues and qualities do not change. But this nature and these virtues are but consequences of the general and efficacious will of God, who does everything in all things. As a result, the study of nature is false and vain in every way when true causes are sought in it other than the volitions of the Almighty, or the general laws according to which He constantly acts.

I grant that recourse to God or the universal cause should not be had when the explanation of particular effects is sought. For we would be ridiculous were we to say, for example, that it is God who dries the roads or who freezes the water of rivers. We should say that the air dries the earth because it stirs and raises with it the water that soaks the earth, and that the air or subtle matter freezes the river because in this season it ceases to communicate enough motion to the parts of which the water is composed to make it fluid. In a word, we must give, if we can, the natural and particular cause of the effects in question. But since the action of these causes consists only in the motor force activating them, and since this motor force is but the will of God, they must not be said to have in themselves any force or power to produce any effects. And when in our reasoning we have come at last to a general effect whose cause is sought, we also philosophize badly if we imagine any other cause of it than the general cause. We must not feign a certain *nature,* a *primum mobile,* a *universal soul*, or any such chimera of which we have no clear and distinct idea; this would be to reason like a pagan philosopher. For example, when we ask how it is that there are bodies in motion, or that agitated air communicates its motion to water, or rather how it is that bodies push one another, then, since motion and its communication is a general effect on which all others depend, it is necessary, I do not say in order to be a Christian but to be a philosopher, to have recourse to God, who is the universal cause, because His will is the motor force of bodies and also produces the communication of their motion. Had He wished not to produce anything new in the world, He would not have set its parts in motion. And if He wishes some day to make some of the beings He has formed incorruptible, our bodies after the resurrection, for example, He will cease to will certain communications of motion with respect to these beings.

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[a] See the following Elucidation.

Third Proof

It would be useless to plow,[a] water, and dispose bodies in a certain way in order to prepare them for what we hope will happen to them. For God has no need to prepare the subjects on which He acts.

Reply

I reply that God can absolutely do all He pleases without finding dispositions in the subjects on which He acts. But He cannot do so without a miracle, or by natural ways, i.e., according to the general laws of the communication of motion He has established, and according to which He almost always acts. God does not multiply his volitions without reason; He always acts through the simplest ways, and this is why he uses the collision of bodies to move them, not because their impact is absolutely necessary for their motion, as our senses tell us, but because with impact as the occasion for the communication of motion, very few natural laws are needed to produce all the admirable effects we see.

A plant must be watered in order for it to grow because, according to the laws of the communication of motion, there is almost nothing but the parts of water that, by their motion and due to their shape, can work their way up between the fibres of plants to carry with them certain salts and other small bodies, and by congealing or attaching themselves to each other in different ways take the shape necessary to nourish them. The subtle matter the sun constantly diffuses can raise water in plants by agitating it, but it does not have enough motion to raise coarse parts of earth. Nevertheless, earth and even air are necessary for the growth of plants: earth to keep water at their roots, and air to excite in the same water a moderate fermentation. But since the action of the sun, air, and water consists only in the motion of their parts, properly speaking only God acts. For, as I have just said, only He through the efficacy of His volitions and through the infinite extent of His knowledge can produce and regulate the infinitely infinite communications of motion occurring at each instant and conserving in the universe all the beautiful things we note in it.

Fourth Proof

No one struggles against himself; no one resists himself. Bodies collide, strike, and resist each other. Therefore, God does not act in them, except through His *concourse*. If God alone produced and conserved motion in bodies, He would divert them before their impact, for He knows that they are impenetrable. Why thrust bodies in order to make them rebound, why make them advance in order to make them withdraw, why produce and conserve useless motion? Is it not an extravagant thing to say that God struggles against Himself and that He destroys His works when a bull fights with a lion, when a wolf devours a sheep, and when the sheep eats the grass that God makes grow. Therefore, there are secondary causes.

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[a] Suarez, ibid.

Reply

Therefore, secondary causes do everything and God does nothing. For God does not act against Himself, and to *cooperate* [*concourir*] is to act. To *cooperate* with contrary actions is to give contrary *cooperation*, and consequently to perform contrary actions. To cooperate with the actions of creatures that resist each other is to act against oneself. To cooperate with useless motion is to act uselessly. Now, God does nothing uselessly; He performs no contrary action; He does not struggle against Himself. Therefore, He does not cooperate with the action of creatures, which often destroy each other and perform useless motions or actions. That is where this proof of secondary causes leads. But this is what reason teaches us.

God does everything in all things, and nothing resists Him. He does everything in all things, for His volitions produce and regulate all motion, and nothing resists Him because He does everything He wills. But here is how this must be conceived. Having resolved, as agreeing more with the immutable order of His attributes, to produce through the simplest ways, this infinite variety of creatures we admire, He willed that bodies move in a straight line because that line is the simplest. But since bodies are impenetrable, and since their motion occurs along lines that are contrary or that intersect, they must strike each other and, as a result, cease to move in the same way. God foresaw this, and yet He positively willed the collision or impact of bodies, not because He is pleased to struggle against Himself, but because He intended to make use of this impact of bodies as an occasion to establish the general law of the communication of motion by which He foresaw He must produce an infinity of admirable effects. For I am convinced that these two natural laws, which are the simplest of all—namely, that motion occurs or tends to occur in a straight line, and that the impact of bodies is communicated in proportion to, and along the line of, their pressure—are sufficient, if the first instances of motion are wisely distributed, to produce the world such as we see it, i.e., the sky, the stars, the planets, the comets, earth and water, air and fire, in a word, the elements of all bodies that are not organized or living; for organized bodies depend on the initial construction of those of which they are born, and it is likely that they were formed at the creation of the world, though not as they appear to our eyes, and that with time they receive nothing more than the growth necessary to become visible. Nevertheless, it is certain that they receive this growth only through the general laws of nature according to which all other bodies are formed, with the result that their growth is not always regular and that monsters are bred.

I say, therefore, that God through the first of the natural laws positively wills, and consequently produces, the impact of bodies, and that He then makes use of this impact, which obliges Him to diversify His action due to the impenetrability of bodies, as an occasion to establish the second natural law, which regulates the communication of motion, and that thus actual impact is the natural or *occasional* cause of the actual communication of motion by which God without altering His ways produces an infinity of admirable works.

If you consider this well, you will clearly see that nothing could be better. But on the assumption that God had not ordained it thus, and that He diverted bodies about to strike each other as if there were a void to receive them, then first, bodies would not be subject to that continuous vicissitude which produces the beauty of the universe, for the generation of bodies occurs only through the corruption of certain others; it is the contrariety of their motion that produces their variety. Secondly, God would not act through the simplest ways, because in order for bodies about to strike each other to continue their motion without striking each other, they would have to describe lines curved in an infinity of different ways; and consequently, different volitions would have to be admitted in God in order to determine their motion. Finally, if there were no uniformity in the action of natural bodies, and if their motion did not occur in a straight line, there would be no sure principles for reasoning in physics and, in a number of instances, for conducting ourselves in life.

It is no disorder for lions to eat wolves, wolves sheep, and sheep the grass that God tends so carefully that He has given it all the things necessary for its own preservation and even a seed for the preservation of its species. This no more proves the efficacy of secondary causes than it does the plurality of causes or the contrariety of the principles of good and evil the Manicheans imagined in order to explain these effects. Rather, it is a sure sign[a] of the grandeur, wisdom, and magnificence of God. For God produces only works worthy of an infinite wisdom, and He produces them with a profusion that sufficiently indicates His power and grandeur. Everything that is destroyed is restored by the same law that destroyed it—so great is the wisdom, power, and fecundity of this law. God does not prevent the destruction of beings through a new volition, not only because His first volition suffices to restore them, but especially because His volitions are much more worthy than the restoration of these beings. They are even much more worthy than everything they produce. And if God has produced this visible world, though unworthy in itself of the action by which it is produced, He did so because He had considerations that are not known to philosophers, and because He could honor Himself in Jesus Christ with an honor that creatures cannot give Him.

When a house crushes an honest man to death, there occurs a greater evil than when one beast devours another, or when a body is required to rebound by the impact of the body it strikes; but God does not multiply His volitions in order to remedy the true or apparent disorders that are the necessary consequences of natural laws. God must not correct or change these laws, although they sometimes produce monsters. He must not upset the uniformity of His conduct and the simplicity of His ways. He must ignore insignificant things, i.e., He must not have particular volitions to produce effects that do not merit them, or that are unworthy of the action of Him who produces them. God produces miracles only when the order He always follows requires it; I mean the immutable order of justice that He wills to render to His attributes. And this order would have it that He act through the simplest ways, and[a] that there be exceptions to His volitions only when absolutely necessary to his intentions, only when the simplicity and uniformity of His conduct honor His immutability and foreknowledge less than miraculous conduct would honor His wisdom, justice, goodness, or some other of His attributes; in a word, only on certain occasions that are entirely unknown to us. Although we are all joined to the order or wisdom of God, we do not know all its rules. We see in it what we must do, but we do not understand in it, and must not make too much effort to understand, everything that God must will.

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[a] See the *Dialogues on Metaphysics* [9–13] where I explain divine Providence.

We have a great example of what I have just said in the damnation of an infinite number of people whom God has allowed to perish during the centuries of error. God is infinitely good, He loves all His works, He wills that all men be saved and that they arrive at knowledge of the truth, for He made them to possess Him; and yet the greatest number damn themselves, the greatest number live and die in blindness and will remain there for all eternity. Is this not because God acts through the simplest ways[b] and follows order? We have shown that according to order God should not have advised through involuntary pleasures[c] the will of the first man, whose fall caused the disorder of nature. It was fitting that all men come from a single man, not only because this way is simple, but also for reasons that are too theological and too abstract to be deduced here. Finally, we must believe that this agrees with the order God follows and the wisdom He always consults in the formation and execution of his intentions. The sin of the first man produced an infinity of evils, it is true. But certainly order required God to permit it and to place man in a state of being able to sin, as I have proved elsewhere.[d]

In willing to restore His work, God only rarely gives those victorious graces that overcome the malice of the greatest sinners. He often gives graces that are useless for the conversion of those receiving them, although He foresees their uselessness with respect to them. He sometimes distributes a great number of them, which nonetheless produce but very little effect in relation to our salvation. Why all these roundabout or indirect ways? He has only to will positively the sinner's conversion in order to produce it in an invincible and efficacious way. Is it not clearly because He acts through the simplest ways and because order would have it so, although we do not always see it so? For God can act only with order and wisdom, although His order and wisdom are often impenetrable abysses for the human mind. There are certain very simple laws in the order of grace[e] according to which God ordinarily acts, for this order has its rules as does the order of nature, although we do not know them as we see the rules for the communication of motion. Let us only follow the counsel that He who perfectly knows the laws of grace has given us in the gospel.

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[a] See the seventh of the *Meditations chrétiennes*.

[b] See the Elucidation on the fourth chapter of the second part on Method. [This was Elucidation 16 in earlier editions; though the Elucidation was withdrawn from later editions, the reference to it stood.]

[c] See the second Elucidation on ch. 5 [5].

[d] See the second Dialogue of the *Conversations chrétiennes* of the Paris edition, 1702, pp. 60 ff.

[e] See the second discourse of the *Treatise on Nature and Grace*.

I say this to satisfy the unjust complaints of sinners, who despise the counsel of Jesus Christ and blame God for their malice and disorders. They would have God perform miracles in their favor and not follow the ordinary laws of grace. They live in pleasure and seek honors; they constantly reopen the wounds sensible objects have caused in their brain, and they often receive new ones; they would have God heal them through a miracle. They are like the wounded who, in the extremes of their pain, destroy their clothes, reopen their wounds, and then, at the sight of approaching death, complain of the cruelty of those who bandage them. They would have God save them because, they say, God is good, wise, and powerful; it is up to Him only to make us happy; He should not have made us in order to lose us. Let them know that God wills to save them and that, to this end, He has done everything He must according to the order of the justice He owes His attributes. We must not believe that He abandons us, because He has given us His own Son to be our Mediator and our victim. Yes, God wills to save us, and to save us all, but through ways we must study with care and exactly follow. God should not consult our passions in the execution of His intentions. He should consult only His wisdom, He should follow only order—and order would have it that we imitate Jesus Christ and that we follow His counsel in order to sanctify and save ourselves. But if God has not predestined all men to conform to the image of His Son, who is the model and exemplar of the elect, it is because in this God acts through the simplest ways in relation to His intentions, which all favor His glory; it is because God is a universal cause and must not act as do particular causes, which have particular volitions for everything they do; it is because His wisdom, which in this is only an abyss for us, would have it so. Finally, it is because this conduct is more worthy of God than some other that would be more favorable to the damned. For the damned are condemned by an order that is as worthy of our adoration as that by which the elect are sanctified and saved; and only ignorance of order and self-love would make one condemn conduct the angels and saints will eternally admire. Elsewhere[a] I reply more fully to the difficulties that might be raised against divine Providence. But let us return to the proofs of the efficacy of secondary causes.

Fifth Proof

If bodies did not have a certain *nature* or *force* to act, and if God did all things, there would be only the supernatural in even the most ordinary effects. The distinction between the natural and the supernatural, which is so widely accepted and which is established by the universal assent of the learned, would be extravagant and chimerical.

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[a] See the *Dialogues on Metaphysics*, the *Treatise on Nature and Grace*, and the *Réponses à M. Arnauld*, especially the *Réponse à sa Dissertation sur les Miracles de L'Ancien Testament*.

Reply

I reply that this distinction is extravagant in the mouth of Aristotle, for the *nature* this philosopher has established is a pure chimera. I say that this distinction is not clear in the mouth of the ordinary man, who judges things through the impressions they make on his senses, for he does not know precisely what he means when he asserts that fire burns by its *nature*. I say that this distinction is allowable in the mouth of theologians, if they mean that *natural* effects are those that are the consequences of the general laws that God has established for the production and preservation of all things, and that *supernatural* effects are those that do not depend on these laws. The distinction is genuine in this sense. But the philosophy of Aristotle combined with the impression of the senses renders it dangerous, it seems to me, because this distinction can turn away from God those who have too much respect for the opinions of this miserable and pitiful philosopher, or who consult their senses instead of withdrawing into themselves in order to consult the truth. Therefore, we should not make use of this distinction without explaining it. Having made use of the term *fortuna*, Saint Augustine[a] retracted it, although there are few people who might be deceived with respect to it. Speaking of sacrificial flesh, Saint Paul[b] warns that idols are nothing. If the *nature* of pagan philosophy is a chimera, if this nature is nothing, we must be advised of it, for there are many people who are mistaken with respect to it. There are more than we might think who thoughtlessly attribute to it the works of God, who busy themselves with this idol or fiction of the human mind, and who render to it the honors due only to the Divinity. They would have God be the author of miracles and certain extraordinary effects, which in one sense are little worthy of His grandeur and wisdom, and they attribute to the power of their imaginary *nature* the constant and regulated effects that the wise alone are able to admire. They even pretend that the marvelous disposition that all living bodies have for preserving themselves and begetting their kind is a production of their *nature*, for according to these philosophers, it is the sun and man that beget men.

We can still distinguish the supernatural order from the natural in several ways. For we can say that the supernatural order relates to future goods, that it was established in expectation of the merits of Jesus Christ, that it is the first and principal order in the intentions of God, and other things sufficient to preserve a distinction the elimination of which we perhaps fear without reason.

Sixth Proof

The main proof adduced by philosophers for the efficacy of secondary causes is drawn from man's will and his freedom. Man wills, he determines himself by himself; and to will and determine oneself is to act. Certainly, it is man who commits sin. God is not the author of sin any more than He is of concupiscence and error. Therefore, man acts through his own efficacy.

[a] Bk. 1 of the *Retract*.

[b] 1 Cor. 10:19.

Reply

I have sufficiently explained in several passages of the *Search after Truth* what the will is, and what man's freedom is, especially in the first chapter of the first book, and in the first Elucidation on the same chapter; it is useless to repeat it. I grant that man wills and that he determines himself; but this is because God makes him will by constantly leading him toward the good. He determines himself; but this is because God gives him all the ideas and sensations that are the motives by which he determines himself. I also grant that man alone commits sin. But I deny that in this He does something; for sin, error, and even concupiscence are nothing. They are only lacks of something. I have sufficiently explained myself on this topic in the first Elucidation.

Man wills, but his volitions are impotent in themselves; they produce nothing;[a] they do not preclude God's doing everything, because God himself produces our volitions in us through the impression He gives us toward the good in general, for without this impression we would be able to will nothing. From himself man has only error and sin, which are nothing.

There is quite a difference between our minds and the bodies that surround us. Our mind wills, it acts, it determines itself; I have no doubts about this whatsoever. We are convinced of it by the inner sensation we have of ourselves. If we had no freedom, there would be no punishment or future reward, for without freedom there are no good or bad actions. As a result, religion would be an illusion and a phantom. But what we clearly do not see, what seems incomprehensible, and what we deny when we deny the efficacy of secondary causes is that bodies have the power to act.

The mind itself does not act as much as is imagined. I know that I will and that I will freely; I have no reason to doubt it that is stronger than the inner sensation I have of myself. Nor do I deny it. But I deny that my will is the true cause[b] of my arm's movement, of my mind's ideas, and of other things accompanying my volitions, for I see no relation whatever between such different things. I even see clearly that there can be no relation between the volition I have to move my arm and the agitation of the animal spirits, i.e., of certain tiny bodies whose motion and figure I do not know and which choose certain nerve canals from a million others I do not know in order to cause in me the motion I desire through an infinity of movements I do not desire. I deny that my will produces my ideas in me, for I do not see even how they could produce them, because my will, which is unable to act or will without knowledge, presupposes my ideas and does not produce them. I do not even know precisely what an idea is. I do not know whether they are produced from nothing and whether they return to nothingness as soon as we cease to perceive them. I speak according to the view of some people.

I produce my own ideas, they will say, by the faculty that God has given me for thinking. I move my arm because of the *union* God has established between

[a] "Nemo habet de suo nisi mendacium & peccatum." Conc. Araus. 2. Can. 22.

[b] According to the sense explained in the chapter of which this is an Elucidation.

my mind and my body. *Faculty* and *union* are terms from logic; they are vague and indeterminate words. No particular being or mode of being can be a *faculty* or a *union*; these terms must be explained. If they say that the union of my mind with my body consists in the fact that God wills that when I will my arm to move, animal spirits disperse in the muscles of which it is composed in order to move it in the way I wish, I clearly understand this explanation and I accept it. But this is to say exactly what I maintain; for since my will determines the practical will of God, it is evident that my arm will be moved not by my will, which in itself is impotent, but by God's, which can never fail to have its effect.

But if they say that the union of my mind with my body consists in the fact that God has given me the *power*[a] to move my arm, just as He has given to my body the power to make me feel pleasure and pain in order to apply me to this body and interest me in its preservation, then surely they suppose what is at issue and go in a circle. They have no clear idea of this power the soul has over the body, nor of that the body has over the soul; they do not fully know what they are saying when they positively assert it. They have arrived at this view through prejudice; they have believed it to be so since infancy and as long as they have been capable of sensing; but the mind, reason, and reflection have no role in it. This is sufficiently clear from the things I have said in the *Search after Truth*.

But, they will say, I know through the inner sensation of my action that I truly have this power; therefore, I am not mistaken in believing it. I reply that when they move their arm they have an inner sensation of the actual volition by which they move it; and they are not mistaken in believing that they have this volition. They also have an inner sensation of a certain effort accompanying this volition, and they also believe that they make this effort. Finally, I grant[b] that they have an inner sensation that the arm is moved during this effort; and on this assumption I also agree to what they say, that the movement of the arm occurs at the instant we feel this effort, or that they have a *practical* volition to move it. But I deny that this effort, which is only a modification or sensation of the soul, which is given to us to make us understand our weakness, and to give us an obscure and confused sensation of our strength, is by itself able to impart motion to animal spirits, or to determine them. I deny that there is a relation between our thoughts and the motion of matter. I deny that the soul has the least knowledge of the animal spirits of which it makes use to move the body it animates. Finally, even if the soul had an exact knowledge of the animal spirits, and even if it were capable of moving them, or of determining their motion, I deny that it could thereby select the nerve ducts, of which it has no knowledge, in order to impel the spirits into them and thus move the body with the promptness, exactness, and force observed even in those who least know the structure of their body.

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[a] I still mean a true and efficacious power.

[b] It seems to me evident that through inner sensation or consciousness the mind does not even know the movement of the arm it animates. Through consciousness it knows only its own sensation, for the soul is conscious only of its thoughts. Through inner sensation or consciousness they know the sensation they have of the movement of their arm; but it is not through consciousness that they are informed of the movement of their arm, of the pain they suffer there, any more than they are of the colors they see on objects. Or if they do not wish to agree with this, I say that inner sensation is not infallible, for error is almost always found in these sensations when they are compound. I have sufficiently proved this in the first book of the *Search after Truth*.

For, even assuming that our volitions were truly the motor force of our bodies (although this seems incomprehensible), how is it conceivable that the soul should move the body? Our arm, for example, is moved only because spirits swell certain of the muscles composing it. Now, in order for the motion that the soul impresses on the spirits in the brain to be communicable to those in the nerves, and thence to others in the muscles of our arm, the soul's volitions must multiply or change proportionately to the almost infinite collisions or impacts that would occur in the particles composing the spirits; for bodies cannot by themselves move those they meet, as I feel I have sufficiently shown. But this is inconceivable, unless we allow in the soul an infinite number of volitions for the least movement of the body, because in order to move it, an infinite number of communications of motion must take place. For, in short, since the soul is a particular cause and cannot know exactly the size and agitation of an infinite number of particles that collide with each other when the spirits are in the muscles, it could neither establish a general law of the communication of motion, nor follow it exactly had it established it. Thus, it is evident that the soul could not move its arm, even if it had the power of determining the motion of the animal spirits in the brain. These things are too clear to pause any longer over them.

The same is true of our faculty of thinking. We know through inner sensation that we will to think about something, that we make an effort to do so, and that at the moment of our desire and effort, the idea of that thing is presented to our mind. But we do not know through inner sensation that our will or effort produces our idea. We do not see through reason that this could happen. It is through prejudice that we believe that our attention or desires are the cause of our ideas; this is due to the fact that a hundred times a day we prove that our ideas follow or accompany them. Since God and His operations contain nothing sensible, and since we sense nothing other than our desires preceding the presence of ideas, we think there can be no cause of these ideas other than our desires. But let us take care. We do not see in us any power to produce them; neither reason nor the inner sensation we have of ourselves tells us anything about this.

I do not think it necessary to relate all the other arguments of which the defenders of the efficacy of secondary causes make use, because these arguments seem to be so weak that it might be imagined that my aim in doing so would be to ridicule them, and I would make myself ridiculous if I were to respond to them seriously. For example, one author says, quite seriously, in favor of his view, ''Created beings are true material, formal and final causes; why will they not be efficient or efficacious causes as well?'' It seems to me that I would not satisfy many people if to answer this author's question I paused to clarify so gross an equivocation, and to show the difference between an efficacious cause and the cause it pleased philosophers to call *material*. Therefore, I leave such arguments in order to come to those drawn from Sacred Scripture.

Seventh Proof

Those who maintain the efficacy of secondary causes commonly adduce the following passages to support their view: "Germinet terra herbam viventem: Producant aquae reptile animae viventis & volatile: Producat terra animam viventem."[a] Therefore, the earth and the water have received through the word of God the *power* to produce plants and animals. God then commanded the birds and the fishes to multiply: "Crescite & multiplicamini, & replete aquas maris, avesque multiplicentur super terram."[b] Therefore, He gave them the power to beget their kind.

In the fourth chapter of Saint Mark,[c] Jesus Christ says that the seed that falls on good earth yields a hundredfold, and that the earth "produces of itself first the blade, then the ear, then the corn in the ear." Finally, it is also written in the book of Wisdom[d] that fire had, as it were, forgotten in favor of God's people the *power* it has to burn. It is therefore certain from the Old and New Testaments that secondary causes have a true power to act.

Reply

I reply that in Sacred Scripture there are also several passages that attribute to God the alleged efficacy of secondary causes. Here are some of them.

"Ego sum Dominus faciens OMNIA, extendens coelos SOLUS, stabiliens terram, & NULLUS mecum." Isa. 44:24. "Manus tuae fecerunt me & plasmaverunt me TOTUM in circuitu." Job 10:8. "Nescio qualiter in utero me apparuistis. . . . Singulorum membra NON EGO IPSA COMPEGI, sed enim mundi creator qui hominis formavit navitatem," &c. Mach. 1:2, 7:22–23. "Cum ipse Deus det omnibus vitam, inspirationem, & omnia." Acts 17:25. "Producens foenum jumentis, & herbam servituti hominum, ut educas panem de terra." Ps. 103 and 148. There is an infinity of such passages, but these are sufficient.

When an author seems to contradict himself, and natural equity or some stronger reason obliges us to make him agree with himself, it seems to me that we have an infallible rule to discover his real view. For we have only to observe when this author speaks according to his lights, and when he speaks according to common opinion. When a man speaks as do others, that does not always signify that he is of their opinion. But when he positively says the opposite of what is customarily said, though he might say it only once, we have reason to judge that it is his view—provided that we know that he is speaking seriously, and after having given careful thought.

For example, an author speaking about the properties of animals will say in a hundred places that beasts sense, that dogs know their master, that they love and fear him, and in only two or three places will he say that beasts do not sense, that dogs are incapable of knowledge, that they neither fear nor love anything. How shall we make this author agree with himself, for he seems to contradict himself? Shall we group all the passages pro and con, and judge his view by the larger number? If so, I do not think there is a man to whom, for example, we can attribute the view that animals do not have a soul; for even the Cartesians always say that a dog senses when struck, and it rarely happens that they say it does not sense. And although I myself attack an infinity of prejudices in this work, several passages can be drawn from it by which it will be proved, unless the rule I am explaining be received, that I uphold them all, and even that I hold the view concerning the efficacy of secondary causes that I am now refuting; or perhaps it will be concluded that the *Search after Truth* is a book full of gross and obvious contradictions, as some people might conclude who perhaps do not have enough equity and penetration to set themselves up as judges of the works of others.

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[a] Gen. ch. 1 [vv. 11 and 20–21].

[b] Ibid. [v. 22.].

[c] "Ultro enim terra fructificat primum herbam; deinde spicam, deinde plenum frumentum in spica" [4:28].

[d] "Etiam suae virtutis oblitus est." Ch. 16 [v. 23].

Sacred Scripture, the Fathers, and most men more often speak of sensible goods, riches, and honors according to the common opinion than according to the true ideas they have of them. Jesus Christ through Abraham says to the evil rich man: ''Fili recepisti BONA in vita tua'' [Luke 16:25], you have received *goods* during your life, i.e., riches and honors. What through prejudice we call *good*, our good, i.e., our gold and silver, is called in Sacred Scripture in a hundred places, our *support* or our *substance*, and even our *honor*, or what honors us. ''Paupertas & honestas a Deo sunt.''[a] Do these manners of speaking used by Sacred Scripture and the most virtuous of people make us believe they contradict themselves, or that riches and honors are truly good with regard to us, and that we must love and seek them? Undoubtedly not, because as these manners of speaking agree with prejudice, they signify nothing, and because we see besides that Jesus Christ compared riches to thorns, that He said they must be renounced, that they are deceitful, and that all that is great and glorious in the world is an abomination before God. Passages from Scripture and the Fathers, then, must not be grouped to judge their true opinion by the greatest number of these passages, unless one wishes constantly to attribute to them the most unreasonable prejudices.

With this assumed, we see that Sacred Scripture says positively that it is God who makes everything, right down to the grass of the fields, that it is He who provides the lilies with the adornments that Jesus Christ preferred to those had by Solomon in all his glory.[b] There are, not two or three, but an infinity of passages that attribute to God the alledged efficacy of secondary causes, and that destroy the *nature* of the Peripatetics.

Moreover, we are led by an almost natural prejudice not to think of God with respect to natural effects, and to attribute power and efficacy to natural causes; ordinarily only miracles make us think of God, and sensible impression initiates our view of secondary causes. Philosophers hold this view because, they say, their senses convince them of it; this is their strongest argument. In the end this view is held by all those who follow the judgment of their senses. Now, language is formed on this prejudice, and we say as commonly that fire has the power to burn as we call gold and silver our good. Therefore, the passages drawn from Scripture or the Fathers for the efficacy of secondary causes prove no more than those an ambitious or avaricious man would choose to justify his conduct. But the same is not true of the passages that can be adduced to prove that God does everything. For as this view is contrary to prejudice, these passages must be understood in a strict sense, for the same reason that we must believe the view of a Cartesian to be that beasts do not sense, although he might have said so only two or three times, and although he might constantly say to the contrary in ordinary discourse that they sense, perceive, and understand.

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[a] Eccles. 1:14 [11:14].

[b] Matt. 6:28–30.

In the first chapter of Genesis, God commands the earth to produce plants and animals; He also orders the waters to produce fishes. And consequently, say the Peripatetics, the water and the earth have received a *virtue* capable of producing these effects.

I do not see that this conclusion is certain. And even if one were obliged to explain this chapter by itself and without appeal to other passages from Scripture, there would be no necessity to accept this consequence. This way of explaining creation is accommodated to our way of speaking about the production of things. Thus it is not necessary to take it literally. One should not make use of it to support prejudices. Since the animals and plants are on the earth, and since the birds live in the air and fish in the water, God, in order to make us understand that it is through His order that they are in these places, produced them there. From the earth He formed the animals and plants, not because the earth was capable of begetting anything nor because God gave it for this purpose a power or virtue that still subsists now, for there is agreement enough that the earth begets neither horses nor oxen, but because the bodies of these animals were formed from the earth, as is said in the following chapter: "Formatis igitur Dominus Deus de humo cunctis animantibus terrae & universis volatilibus coeli."[a] The animals were formed from the earth, "formatis de humo," and were not produced by the earth. Thus, after Moses related how the animals and fishes were produced by virtue of the command God had made to the earth and water to produce them, he adds that *it is God Himself who made them*, in order not to attribute their production to the earth and water. "CREAVITQUE Deus cete grandia,"; and "omnem animam viventem atque motabilem quam PRODUXERANT AQUAE in species suas, & omne volatile secundum genus suum." And further below, after having spoken of the formation of animals, he adds‘ "Et FECIT DEUS bestias terrae juxta species suas, & jumenta & omne reptile terrae, in genere suo" [Gen. 1:21, 25].

We might note in passing that where our Vulgate contains "Germinet terra herbam . . . producant aquae reptile animae viventis & volatile super terram" [Gen. 1:11, 20], expressions that might lead one to believe that the earth and the waters have received some true power to produce the animals and plants, the

[a] V.19 [2:19].

words of the original are far from this thought. They signify simply that God said let the earth be covered with plants, let the waters be abundant with fish, and let the birds fly in the air. The verbs and nouns in this passage have the same root, which cannot be translated in other languages. It is as though it had been, let the earth *be verdant with verdure*, let the waters *be fishy with fish*, let the *flying creatures fly*. The Vulgate has also omitted the word *vole*, which has made some people believe that the birds were drawn from the waters, but we find in the Hebrew, *volatile* VOLITET. This last omitted word shows that the birds were not produced by a virtue in the water. Moses' aim here, therefore, was not to prove that the waters had received a real *power* to produce these fishes and birds, but only to indicate the place destined for each thing by God's order, whether to live in it or to be produced in it; *volatile* VOLITET *super terram*. For ordinarily when we say that the earth produces trees and plants, we mean to signify only that it provides the water and salts necessary to the germination and growth of seeds. I do not pause to explain the other passages from Scripture that taken literally favor secondary causes, for one is not obliged, and it is even dangerous to take literally expressions that are based on the ordinary judgments according to which language is formed; since the ordinary man speaks of all things according to the impressions of the senses and the prejudices of youth, the mind of God often accommodates itself to their weakness in order to instruct the simple as well as more enlightened people. "Inclinavit Scripturas Deus usque ad infantium & lactentium capacitatem," says Saint Augustine.[a]

The same reason that obliges us to take literally the passages from Scripture directly opposed to prejudice also permits us to think that the Fathers never had the express intention of maintaining the *efficacy* of secondary causes or the *nature* of Aristotle. For though they often speak in a way that favors the prejudices and judgments of the senses, they sometimes explain themselves in a way that sufficiently discloses the disposition of their mind and heart. Saint Augustine, for example, gives sufficient indication that he believes the will of God to be the *power* or *nature* of each thing when he speaks as follows:[b] "We are wont to say that wonders are contrary to nature; but this is not true. For as the will of the Creator is the nature of each of the creatures, how could what occurs by the will of God be contrary to nature? Miracles or wonders are therefore not contrary to nature, but contrary to what is known to us about nature."

It is true that in several places Saint Augustine speaks according to prejudice. But I maintain that this proves nothing, because only passages contrary to prejudice need be explained literally. I have just related the reasons for this.

If in all his works Saint Augustine had never said anything against the efficacy of secondary causes, and had always favored this view, one perhaps might use his authority in order to establish it. But should it not appear that he seriously examined this question, one would always have the right to think he had no fixed and settled view on this topic, and that perhaps he was carried along, as it were, by the impression of the senses to believe without reflection a thing that appears certain until examined with some care.

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[a] In Ps. 8 [8:8].

[b] "Omnia quippe portenta contra naturam dicimus esse, sed non sunt. Quomodo enim est contra naturam quod Dei fit voluntate: cum voluntas tanti utique conditoris conditae rei cujusque natura sit? Portentum ergo fit non contra naturam, sed contra quam est nota natura." St. Aug. *De civitate Dei*, bk. 21. ch.8. See also, ibid., bk.5. ch.11, and his Letter 205 to Consentius, number 17.

It is certain, for example, that Saint Augustine always spoke of animals as if they had souls—I do not say a corporeal soul, for this holy doctor knew too well to distinguish the soul from the body to think that there could be corporeal souls. I say a spiritual soul, for matter is incapable of sensation. Nonetheless, I believe that it is more reasonable to use the authority of Saint Augustine to prove that animals have no soul than to prove that they do; for[a] from the principles he carefully examined and securely established, it manifestly follows that they do not, as Ambrosius Victor shows in his sixth volume of the *Philosophia Christiana*. But since the view that animals have a soul, or that they feel pain when struck, agrees with prejudice (for there is no child who does not believe it), we maintain the right to think that Saint Augustine spoke on this according to common opinion, that he did not seriously examine this question, and that had he begun to doubt it and reflect on it, he would not have said a thing so contrary to his principles.

Should the Fathers have favored the efficacy of secondary causes, therefore, perhaps one would not be obliged to consider their view unless it appeared that they had carefully examined this question and that what they said about it did not result from language formed and based on prejudice. But surely just the opposite is the case, for the Fathers and the holiest and most enlightened people in religion have ordinarily shown in several passages of their works what the disposition of their mind and heart was with respect to the question we are discussing.

The most enlightened, and even the greatest number, of theologians, seeing on the one hand that Sacred Scripture opposed the efficacy of secondary causes and on the other that the impression of the senses, public opinion, and especially the philosophy of Aristotle, which was esteemed by the learned, established it (for Aristotle believes that God does not involve Himself in the detail of what takes place in the sublunary region, that this attention is unworthy of His grandeur, and that the *nature* he supposes in all bodies suffices to produce everything occurring here below)—theologians, I say, in order to accord faith with the philosophy of the pagans and reason with the senses, have been inclined to the view that secondary causes would do nothing unless God lent them His *cooperation*. But because this immediate cooperation by which God acts with secondary causes involves great difficulties, some philosophers have rejected it, claiming that in order for them to act it is enough that God should conserve them with the *virtue*

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[a] Some of these principles of St. Augustine are: that what has never sinned can suffer no evil; now according to him himself, pain is the greatest of evils, and animals suffer it. That the more noble cannot have as an end the less noble; now according to him the soul of animals is spiritual & more noble than the body, & yet they have no other end than their bodies. That what is spiritual is immortal; & the soul of animals, although spiritual, is subject to death. There are many other such principles in the works of St. Augustine from which we can conclude that animals do not have a spiritual soul such as he admitted in them. See St. Augustine, chs. 22–23 *De anima & ejus origine*.

He gave them in creating them. And as this opinion agrees entirely with prejudice, since God's operation in secondary causes involves nothing sensible, it is ordinarily received by the common man, and by those who have attended more to the physics and medicine of the ancients than to theology and meditation on the truth. Most men imagine that God first created all things, that He gave them all the faculties or qualities necessary for their preservation, that, for example, He gave the first motion to matter and then left it to itself to produce by the communication of its motion this variety of forms we admire. It is ordinarily supposed that bodies can move each other, and this opinion is even attributed to Descartes, contrary to what he expressly says in articles 36 and 37 of the second part of his *Principles of Philosophy*. Since men cannot avoid the realization that creatures depend on God, they reduce this dependence as much as they can, whether through a hidden aversion for God or through stupidity and a dreadful insensitivity toward His operation. But as this view is ordinarily received only by those who have not studied religion, and who follow their senses and the authority of Aristotle rather than their reason and the authority of the holy books, there is no reason to fear their becoming too well established in the mind of those who have any love for truth and religion; for however little we apply ourselves to the examination of this view, we easily discover its falsity. But the opinion of the *immediate cooperation* of God with each action of secondary causes seems to agree with passages from Scripture, which often attribute the same effect to God and to creatures. I shall prove in the last Elucidation (number 43) that God alone can give the soul perceptions of objects, and that no creature, no finite intelligence whatever power it might have, can in this case be prepared to act and to require God's cooperation.

We must consider, then, that there are passages in Scripture where it is said that God alone acts: ''Ego sum Dominus,'' says Isaiah,[a] ''faciens OMNIA, extendens coelos SOLUS, stabiliens terram, & NULLUS mecum.'' A mother moved by the spirit of God tells her children that it was not she who formed them: ''Nescio[b] qualiter in utero meo apparuistis, singulorum membra NON EGO IPSA COMPEGI, sed mundi creator,'' &c.[c] It does not say, as do Aristotle and the school of Peripatetics, that it is to her and the sun that they owe their birth, but to the Creator of the universe. Now, this view that only God acts and forms children in their mother's womb does not agree with common opinion and prejudice.[d] According to the principle I have previously established, these passages must be explained literally. But on the contrary, since the view of the efficacy of secondary causes agrees with common opinion and sensible impression, even if passages should be found that expressly say that secondary causes act alone, they would have no force compared with these. Cooperation, then, is not enough to reconcile the different passages from Sacred Scripture; all force, power, efficacy must be placed on the side of God.

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[a] 44:24.

[b] 2 Mach. 7:22–23.

[c] ''Sol & homo generant hominem.'' Arist. *Phys. Ausc.* 1.2 c.2. See St. Thomas on this text.

[d] ''Nec qui concumbit, nec qui seminat est aliquid, sed qui format Deus [. . . .] Ipse namque operatione qua nunc usque operatur, facit ut numeros suos explicent semina & a quibusdam latentibus atque invisibilibus involucris in formas visibiles hujus quod aspicimus decoris evolvant.'' Aug. *De civ. Dei* bk. 22. ch. 24 n.2.

But even if God's immediate *cooperation* with secondary causes could reconcile the different passages of Sacred Scripture, I do not know if withal it should be received. For the holy books were not produced solely for contemporary theologians, but also for the Jewish people. As a result, if the Jews of yore were not enlightened or subtle enough to imagine a *cooperation* such as is admitted in Scholastic theology, or to agree with something the cleverest theologians have difficulty in explaining, it seems to me to follow that the Sacred Scripture that attributes to God, and even to God alone, the production and conservation of all things would plunge them into error, and that the authors of the holy books would have spoken to men a language not only unknown but deceptive. For in telling them that God does all, they would only have claimed that God provides His cooperation for all things; and certainly the Jews did not have this cooperation in mind, those nonphilosophical among them believing that God does everything and not that God cooperates with everything.

But for a surer judgment about cooperation, a careful explanation is required of the different systems the Scholastics have made of it. For besides the impenetrable obscurities common to all opinions that can be explained and supported only by vague and indeterminate terms, there is such a wide variety of views on this matter that we would have no great difficulty in discovering their cause. But I have no wish to involve myself in a discussion that would be too wearisome both for me and for those who will read this. I prefer on the contrary to try to show that my views might agree to some extent with those of the greater number of Scholastic theologians, although I cannot conceal the fact that their language appears to me quite equivocal and confused. I shall explain.

I hold, as I have said elsewhere, that bodies, for example, do not have the force to move themselves and that therefore their *motor force* is but the action of God, or in order not to use a term signifying nothing distinct, their motor force is but the will of God, always necessarily efficacious, which conserves them successively in different places. For I do not believe that God creates certain beings to make them the motor force of bodies—not only because I have no idea of this sort of being, and because I do not see that they could move bodies, but also because these beings would need others to move them, and so on to infinity. For only God is at once both motor and immobile.

This being so, when a body collides with and moves another, I can say that it acts through the cooperation of God, and that this cooperation is not different from its own action. For a body moves the one with which it collides only by its action or its motor force, which ultimately is but God's will, which conserves this body successively in several places—the transport of a body being not its action or its motor force but the effect of its motor force. Almost all theologians speak as follows: that the action of secondary causes is not different from the action by which God cooperates with them. For although they understand it in different ways, they hold that God acts in creatures through the same action as do creatures. And they are obliged to speak this way, it seems to me; for if creatures acted through an action God did not produce in them, their action qua efficacious action would be, it seems to me, independent; now they believe, as they must, that creatures depend immediately on God, not only for their being, but for their operation as well.

Likewise with respect to free causes, I hold that God constantly gives to the mind an impression toward the good in general, and that He even determines this impression toward particular goods by the impression of them He places in us, as I have explained in the first Elucidation; and this is also held by theologians, who assert that God moves and predisposes our wills. Thus, the force that sets our minds in motion is the will of God, which animates us and leads us toward the good; for God does not create beings to make them the motor force of minds for the same reasons He does not create beings to make them the motor force of bodies. Since God's volitions are efficacious by themselves, it is enough that He should will in order to produce, and it is useless to multiply beings without necessity. In addition, everything real in the natural determinations of our impulses also comes solely from God's action in us; for I am not speaking here about our consent to these determinations. So much is clear from the first Elucidation. Now we act and produce nothing except through our volitions, i.e., through the impression of God's will, which is our motor force. For our volitions are efficacious only insofar as they come from God, just as moving bodies impel others only insofar as they have a motor force transporting them. Thus, we act only through God's cooperation,[a] and our action viewed as efficacious and capable of producing some effect is not different from God's; as most theologians say, they are the same action: *Eadem numero actio*.

Now, all the changes occurring in the world have no other natural cause than the motion of bodies and the volitions of minds. For according to the general laws of the communication of motion, the invisible bodies surrounding visible bodies produce by their various motion all the changes whose cause is not apparent to our eyes; and according to the laws concerning the union of soul and body, when the bodies surrounding us act on our own, they produce in our soul an infinity of sensations, ideas, and passions. Likewise, our mind, according to the same laws, excites in itself by its volitions an infinity of different perceptions; for our volitions apply and modify our mind as natural causes, the efficacy of which nonetheless comes from the laws God has established. And when our mind acts on our body, it produces in it several changes, always in virtue of the laws concerning its union with the body; and by means of our body it also produces in those surrounding us a very great number of changes in virtue of the laws of the communication of motion. Consequently, no natural effect has any natural or occasional cause other than the motion of bodies and the volitions of minds. This is something to which one will easily agree however little one attends to it. For I assume that one is not prejudiced by those who speak without knowing what they say, who constantly imagine beings of which they have no clear ideas, and who claim to explain things they do not understand through things that are absolutely incomprehensible. Thus, since it has been shown that God executes through His cooperation, or rather through His efficacious will, everything the motion of bodies and the volitions of minds do as natural or occasional causes, there is nothing God does not do by the same action as His creature's—not because creatures have any efficacious action by themselves but because God's power is, as it were, communicated to them by the natural laws God has established in their favor.

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[a] See Suarez, bk. 1 *De concursu Dei cum voluntate* ch. 4.

This is all I can do to reconcile what I think with the view of theologians who maintain (a) the necessity of immediate cooperation and (b) that God does everything in all things through the same action as that of creatures. For as to the other theologians, I believe that their views are untenable in every way, especially Durand's,[a] and that of certain ancients refuted by Saint Augustine,[b] who absolutely denied the necessity of cooperation, and would have had secondary causes do all things through a power God gave them in creating them without further concerning Himself with them. For although this opinion might involve fewer difficulties than that of other theologians, it appears to me so contrary to Scripture, and so consonant with prejudice, to say no more of it, that I do not think it can be maintained.

I grant that the Scholastics who say that God's immediate cooperation is the same action as that of creatures do not understand it exactly as I have explained it, and that with the possible exceptions of Biel and Cardinal d'Ailly,[c] all those I have read think the efficacy that produces effects comes from the secondary cause as well as the primary. But as I am attempting to observe this law, to say only what I conceive clearly and to side with what best agrees with religion, I believe I shall not be found amiss in relinquishing a view that to many people seems the more incomprehensible the more effort is spent to understand it, and in establishing another that perfectly agrees not only with reason but also with the sanctity of religion and Christian morality. This is a truth I have already proved in the chapter being elucidated; but it is appropriate for me to say something additional in order to justify fully what I have already said about the present question.

Reason and religion convince us that God wills to be loved and respected by His creatures—loved as a good, feared and respected as a power; this is a truth that cannot be doubted without impeity and foolishness. To love God as He wills and deserves to be loved, we must, according to the first Commandment of the Law and of the Gospel, and even according to reason, as I have shown elsewhere,[d] love Him with all our strength or according to our capacity for loving. It is not enough to prefer Him to all things; we must also love Him in all things. Otherwise our love is not as perfect as it must be, and we do not render to

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[a] See Durand, in 2. Dist. 1. Quest. 5. & Dist. 37.

[b] *Lib. imp. de Gen. ad litt.* bk 5. ch. 20.

[c] In 4 Sent. Dist. I. quest. 1. De Aliaco, ibid.

[d] Bk. 4, ch. 1.

God all the love He impresses in us, and impresses in us only for Himself because He acts only for Himself. And to render God all the respect due Him, it is not enough to adore Him as the sovereign power and to fear Him more than His creatures; we must also fear and adore Him in all His creatures, all our reverence must be directed toward Him, for honor and glory are due only Him. This is what God has commanded us with these words: ''Diliges[a] Dominum Deum tuum ex toto corde tuo, & ex tota anima tua, & ex tota fortudine tua.'' And with these: ''Dominum Deum tuum timebis, & illi soli servies.'' Thus, the philosophy that teaches us that the efficacy of secondary causes is a fiction of the mind, that Aristotle's, and certain other philosophers', *nature* is a chimera, that only God is strong and powerful enough not only to act in our soul but also to give the least motion to matter, this philosophy, I say, agrees perfectly with religion, the end of which is to join us to God in the closest way.

We ordinarily love only things capable of doing us some good; this philosophy therefore authorizes only the love of God, and absolutely condemns the love of everything else. We should fear only what can do us some evil; this philosophy therefore sanctions only the fear of God and absolutely condemns all others. Thus, it legitimizes all the soul's impulses that are just and reasonable, and it condemns all those that are contrary to reason and religion. For by this philosophy you will never legitimize love for riches, passion for grandeur, debauched behavior, since the love of the body appears absurd and ridiculous according to the principles established by this philosophy.

It is an incontestable truth, a natural opinion, even a common notion that we should love the cause of our pleasure and should do so in proportion to the felicity it does or can make us enjoy. Not only is it right, it is even necessary, as it were, that the cause of our happiness be the object of our love. Thus, following this philosophy we should love only God, for it teaches us that only He is the cause of our happiness. According to this philosophy, the bodies surrounding us do not act on the one we animate, and *a fortiori*, do not act on our mind. It is not the sun that illumines us and gives us movement and life. It does not cover the earth with fruits and flowers and does not provide us with our food. This philosophy teaches us, as does Scripture, that it is *God who provides the rain and regulates the seasons, who gives to our bodies their food and fills our hearts with joy, that only He can do us good, and that He never ceases to witness thereby what He is, although in ages past He suffered all nations to walk in their own ways.*[b] Following the language of this philosophy, we must not say that *nature* provides us with goods;[c] we must not say that it is God and nature. We must say that it is God alone and speak in this way without equivocation in order not to deceive the simple. For we must distinctly recognize the sole cause of our happiness if we wish to make it the sole object of our love.

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[a] Deut. ch. 5 [6:5].

[b] ''In praeteritis generationibus dimisit omnes gentes ingredi vias suas. Et quidem non sine testimonio semetipsum reliquit benefaciens de coelo, dans pluvias & tempora fractifera, implens cibo & laetitia corda nostra.'' Acts 14:15–16.

[c] ''Ergo nihil agis, ingratissime mortalium, qui te negas Deo debere, sed naturae: quia nec natura sine Deo est, nec Deus sine natura, sed idem: est utrumque, nec distat. Officium si quod a Seneca accepisse, Annaeo te diceres debere, vel Lucio: non creditorem mutares, sed nomen.'' Seneca *De beneficiis* bk. 4. ch. 8.

It is also an incontestable truth that we should fear things capable of causing us evil, and fear them in proportion to the evil they can cause us. But this philosophy teaches us that only God can cause us evil—it is He, Isaiah[a] says, "who creates the darkness as well as the light, who makes both good and evil"—and even that no evil occurs that He does not produce, as another prophet says. Thus, we should fear only Him. We should fear neither plague, nor war, nor famine, nor our enemies, nor even devils; we should fear God alone. We should flee a sword with which someone would stab us, we should avoid fire, we should leave a house about to crush us; but we should not fear these things. We can *flee* bodies that are the natural or *occasional* causes of evil; but we should *fear* only God as the *real cause* of all the misfortunes of the wicked, and we should hate only sin, which obliges the cause of all goods to become the cause of all our evils. In a word, *all the mind's impulses* [*mouvemens*] *should be referred only to God, for only God is above the mind, and the motion* [*mouvemens*] *of our body can be referred to those surrounding us*. This is what we are taught by the philosophy that does not admit the efficacy of secondary causes.

But on the assumption of the efficacy of secondary causes, it seems to me that we have some grounds for fearing and loving bodies, and that to regulate our love according to reason, it is enough to prefer God to all things, the first and universal cause to secondary and particular causes. It does not seem necessary to love God with all our strength: "Ex tota mente, ex toto corde, ex tota anima, ex totis viribus," as the Gospel says [Mark 12:30].

Yet when one is content to prefer God to all things and to adore Him with a worship and love by preference, without continually striving to honor and love Him in all things, it often happens that one is deceived, that charity is lost and dissipated, and that one is concerned more with sensible goods than with the sovereign good. For if one were to ask the greatest sinners, and perhaps even idolaters, whether they preferred the universal cause to particular ones, they would perhaps have no fear in reply to us from the midst of their debauches and aberration that they do commit a breach of so essential a duty, and that they fully know what they owe God. I grant that they are mistaken, but without the efficacy of secondary causes they have no likely excuse to justify their behavior; and upon the supposition of this efficacy, the following is what they can say to themselves when their passions blind them and they listen to the reports of their senses.

I am made to be happy; I cannot prevent myself from wishing to be happy. I must therefore occupy my mind with everything that can give me what I invincibly want, and my heart must devote itself to it. Why then should I not love sensible objects, if they are the true causes of the happiness I find in their possession? I recognize the Sovereign Being as alone worthy of sovereign worship; I prefer Him to everything. But since I do not see that He wishes anything of me, I enjoy the goods He gives me by means of the secondary causes to which He has subjected me, and I do not uselessly concern myself with Him. That there is no good He affords me immediately and by Himself, or at least without creatures playing a role in it, is a sign that He does not will that my mind and heart apply themselves immediately to Him, or at least that He wills that the sentiments of my mind and heart be shared between Him and His creatures. Since He has communicated some of His power and glory to the sun, has surrounded it with brilliance and majesty, has made it sovereign over all His works, and since through the influence of this great star we receive all the goods necessary for life, why should we not use part of this life to enjoy ourselves in its light, and to bear it witness of the feeling we have for its grandeur and its benefits? Would it not be the ultimate ingratitude to receive the bounty of all things from this excellent creature and to have for it no feeling of gratefulness? And would it not be dreadful stupidity and blindness not to have any impulse of respect and fear for that the absence of which freezes and kills us, and which approaching us would burn and destroy us? I repeat, we must prefer God to all things and esteem Him infinitely more than His creatures; but we must also fear and love His creatures. This is how we justly honor Him who made them, merit His good graces, and require of God new benefits. It is clear that He approves of the honor we pay His creatures, because He has communicated His power to them, and every power deserves honor. But as the honor must be proportionate to the power, and as the power of the sun and other sensible objects is such that we receive from it all sorts of goods, it is right for us to honor them with all our strength, and to consecrate to them, after God, all that we are.

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[a] "Ego Dominus, & non est alter, formans lucem & creans tenebras, faciens pacem & creans malum: Ego Dominus faciens omnia haec." Isa. 47:7 [6–7]; Amos 3:6.

This is how one naturally reasons when following the prejudice of the efficacy of secondary causes. And this is manifestly how the founders of idolatry reasoned. This is what is thought by the one esteemed most learned among the Jews. He[a] begins a treatise he composed on idolatry as follows: ''In the time of Enos men fell into strange errors and the wise men of that age lost their sense and reason. Enos himself was among these deluded people. These were their errors. Because, they said, God created the stars and their heavens to govern the world, placed them in a high place, surrounded them with brilliance and glory, and uses them to carry out his orders, it is right for us to honor them and pay them our homage and respect. It is the will of our God that we honor these things He has raised up and covered with glory, just as a prince wishes his ministers to be honored in his presence because the honor paid them reflects on him. [. . .] After this thought came into their heads, they began to build temples to the stars, make sacrifices to them, speak their encomiums, and even prostrate themselves before them, imagining that they were thereby making themselves pleasing to Him who created them.'' This is the origin of idolatry.

It is so natural and fitting to have feelings of gratitude in proportion to the goods we receive that almost[b] all people have adored the sun because they have all judged it to be the cause of the goods they enjoyed. And if the Egyptians adored not only the sun, the moon, and the river Nile, whose overflow caused the fertility of their country, but also went as far as the vilest animals, it was, according to the report of Cicero,[a] because of some utility they derived from them. Thus, since we cannot and indeed should not banish from the mind of men their natural inclination for the true causes of their happiness, it is clear there is at least some danger in maintaining the efficacy of secondary causes, although there might be joined to it the necessity of *immediate cooperation*, which involves something incomprehensible I know not what, and which comes after the event, as it were, in order to justify our prejudices and the philosophy of Aristotle.

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[a] R. Moses Maimonides.

[b] See Vossius *De idololatria* bk. 2.

But there is no danger in saying only what we see and attributing power and efficacy only to God, because we see only His volitions to have an absolutely necessary and indispensable connection with natural effects. I grant that men nowadays are sufficiently enlightened not to fall into the gross errors of the pagans and idolaters; but I have no fear in saying that often our mind is turned, or rather that our heart is disposed as was the pagans', and that there will always be a kind of idolatry in the world until the day when Jesus Christ ''restores[b] His kingdom to God His father, having destroyed every empire, every dominion, and every power, so that God may be everything in all things.'' For is it not a kind of idolatry to make a god of one's belly, as Saint Paul[c] says? Is it not to be an idolater of the god of riches to work ceaselessly to acquire goods? Is it to render God the worship due Him and to adore Him in mind and in truth[d] to have a heart full of sensible beauty and a mind dazzled by the brilliance of some imaginary grandeur?

Since men think they will receive from the bodies surrounding them the pleasures they enjoy in using them if they join themselves to these bodies with all the strength of their soul, the source of their disorder is therefore their sensible conviction in the efficacy of secondary causes. Only reason tells them that God alone acts in them. But beside the fact that this reason speaks so low that they almost do not hear it, and that the senses contradicting it cry so loud that their din stuns them, they are further confirmed in their prejudice in ways and by arguments all the more dangerous as they bear the external marks of truth.

Philosophers, and especially Christian philosophers, should constantly battle against the judgments of the senses or prejudices, and especially prejudices as dangerous as that of the efficacy of secondary causes; and yet, for I do not know what reason, people whom I rightfully respect a great deal try to confirm this prejudice, and even to pass off as superstitious and ridiculous a doctrine so holy, pure, and well-founded as that which maintains that only God is a true cause. They do not want us to love and fear God in all things, but, they say, to fear all things in relation to God. We should love creatures, they say, because they are good; we must love and respect our father, honor our prince and our superior, because God commands it. I do not deny this, but I deny that we must love creatures as our goods, though they are good or perfect in themselves. I deny that we can serve and respect men as we do our master. Or, to explain myself more clearly, I claim that we must not serve our master, obey our father and our prince with any other intention than to serve and obey God. This is what Saint Paul[a] says, *who became all things to all men and who obliged in all things* for the salvation of those to whom he preached: ‘‘Servi, obedite Dominis carnalibus cum timore & tremore in simplicitate cordis vestri SICUT CHRISTO; non ad oculum servientes quasi hominibus placentes, sed ut servi Christi facientes voluntatem Dei ex animo, cum bona voluntate servientes SICUT DOMINO ET NON HOMINIBUS.’’[b] And in another Epistle:[c] ‘‘Non ad oculum servientes quasi hominibus placentes, sed in simplicitate cordis Deum timentes. Quodcumque facitis ex animo operamini SICUT DOMINO ET NON HOMINIBUS.’’ We should therefore obey our father, serve our prince, honor our superiors as UNTO GOD AND NOT UNTO MEN: ‘‘Sicut Domino & non hominibus.’’ This is clear and can have no evil consequences. Superiors will always be better honored and better served by it. But I believe I can say that a master who wished to be honored and served, as having in him a power other than God’s, would be a demon, and that those serving in this spirit would be idolaters; for I cannot help believing that honor and love unrelated to God are kinds of idolatry. SOLI DEO HONOR ET GLORIA.

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[a] ''Ipsi qui irridentur Aegyptii, nullam belluam nisi ob aliquam utilitatem, quam ex ea caperent, consecraverant.'' *De natura deorum* bk. 1 [ch. 36]. See Sextus Empiricus, bk. 8. ch. 2.

[b] 1 Cor. 15:24

[c] ''Quorum Deus venter est.'' Phil. 13:9. [3:19]. ''Omnis ornicator, aut immundus, aut avarus, quod est idolorum servitus.'' Eph. 5:5.

[d] ''In spiritu & veritate oportet adorare.'' John 4:24

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[a] 1 Cor. 9:22, 10:33.

[b] Eph. 6:6 [5–6].

[c] Col. 3:22 [–23]. ‘‘Nos si hominem patrem vocamus, honorem aetati deferimus, non Autorem vitae nostrae ostendimus.’’ Hier. in ch. 23. Matt.

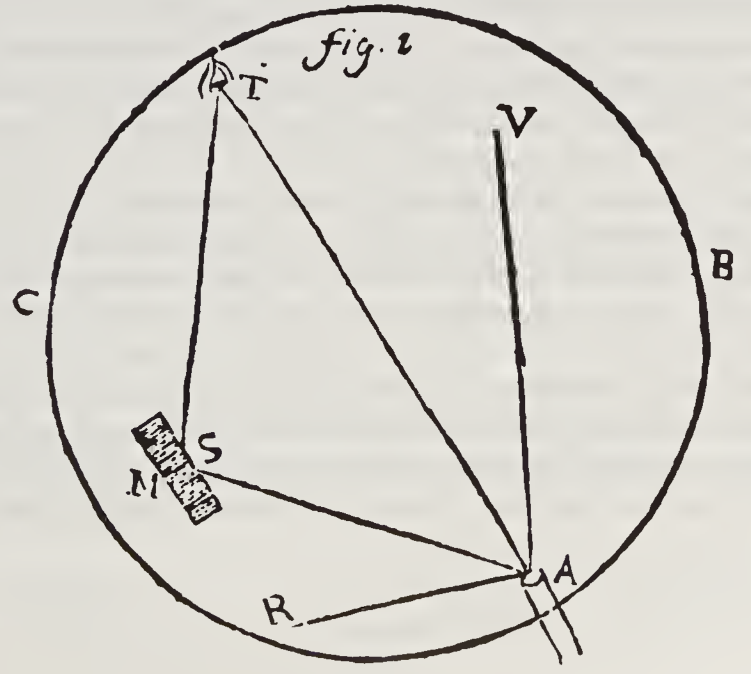
Foreword

Although the following discourse is in part found in the *mémoires* of the *Académie Royale des Sciences*, it was thought appropriate to append it to this work, not only because it might serve as an elucidation of what I have said in it about light and colors, but also because about ten years ago part of it was printed in London at the end of the last English translation of the *Search after Truth*. I understand that this translation does not represent my view with sufficient precision, not through the fault of Taylor, its author, but through the deficiency of the manuscript that fell into his hands. It is to be desired that translators be so kind as to inquire of authors as to the most exact editions of the works they intend to translate; their work would then be more useful to the public. It is partly for this reason that I placed a list of the best editions of my books after the preface of this work, because I have learned that they have been translated on the basis of rather imperfect copies.

ELUCIDATION SIXTEEN

On light and colors, the generation of fire, and several other effects of subtle matter.

1. In order to explain my view on the natural causes of light and colors, let us conceive of a large balloon compressed from without by an almost infinite force, and filled with a fluid matter whose motion is so rapid that not only does it turn with great speed about a common center but also that each part of it in order to expend all its motion, i.e., to move as much as it has force to, is also required to turn on the center of an infinity of tiny vortexes and to flow between them, and all this with extraordinary rapidity. In a word, let us conceive of the matter contained in this balloon roughly as Descartes described the matter of our vortex, except that the tiny balls of his second element, which he assumed to be hard, are themselves but tiny vortexes, or at least are hard only through the compression of



the matter surrounding them. For if these tiny balls were hard by themselves, as I believe I have sufficiently shown not to be true[a], they could not, as will be seen in what follows, transmit light and colors through the same point where rays cross. But finally, if this assumption[b] is difficult to imagine, it now suffices for us to conceive of a balloon full of water, or rather of matter that is infinitely fluid and also extremely compressed. The circle ABC is the cross section of this balloon.

2. On this assumption, should a small hole be made in the balloon, for instance at A, I say that all the parts of the water, such as those, for example, at R, S, T, V, will tend toward the point A in the straight lines RA, SA, and so on, for since all its parts that were equally pressed cease to be so in the direction of the hole A, they must tend toward it, because every pressed body must move in the direction in which it finds less resistance.

But if a piston is placed at the opening A and is quickly inserted, the same parts R, S, T, V, and so on, will all tend to recede from the hole by the same straight lines AR, AS, and so forth, because while the piston is being inserted, they are pressed more in the direction away from the piston than in any other.

Finally, if the piston is conceived to be inserted and withdrawn very quickly, all the parts of the fluid matter that exactly fill the balloon, which I assume to be very elastic, or to stretch or expand only with difficulty, will receive an infinity of disturbances that I call *pressure vibrations*. Let us apply this to light and colors.

Because everything is a plenum, our eyes, though closed or in the dark, are actually compressed. But this compression of the optic nerve does not excite any sensation of colors, because this nerve is always equally compressed—for the same reason that we do not feel the weight of the air surrounding us, although it weighs more than twenty-eight ounces of quicksilver. But if we conceive of an eye at T, or elsewhere, turned toward a torch A, the parts of the flame, which are in continuous motion, will, by very rapid vibrations or disturbances, constantly press the subtle matter from all sides more strongly than they do in the dark, and consequently, due to the plenum, they will press it as far as the fundus of the eye; the optic nerve, being more compressed than usual, and disturbed by vibrations, will excite in the soul a sensation of light or of bright and vivid whiteness.

But if a black body M is assumed at S, since the subtle matter is not reflected toward the eye turned in that direction and does not disturb the optic nerve, we shall see black, as when we look at the opening of a cellar or of the pupil of an eye.

If the body M is such that the matter disturbed by the torch is reflected by the body toward the eye and produces in it equally frequent vibrations, the body will appear white, and the more white as there are more rays reflected. It will even appear as luminous as the flame of the torch if the body M is polished and all the rays, or a large number of them in the same order, are reflected, because brilliance results from the force of the vibrations and color from their frequency. But if the body M is such that the reflected subtle matter excites vibrations in the eye that are more or less frequent in degrees I do not think can be determined exactly, we shall have one of the primitive or homogeneous simple colors, such as red, yellow, blue, and so forth, and we shall have the other compound colors, and even whiteness, which is the most compound of all, according to the different mixtures of rays having different frequencies. I say that whiteness is the most compound of all because it is composed of the assemblage of vibrations of different frequencies that each different part of the flame produces in the subtle matter. Since everything is a plenum, and is infinitely compressed, each ray preserves for its full length the same frequency of vibration as the tiny part of the flame producing it. And because the motion of the flame's parts is variable, the rays of colors necessarily have vibrations and produce different refractions. But on this the experiments found in Newton's excellent work must be consulted.

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[a] The last chapter of *The Search after Truth*.

[b] The proof of this assumption will be seen below.

This is what I meant when in several of my books I proposed that light and colors consisted only in different disturbances[a] or vibrations of ethereal matter, or in *more or less frequent pressures vibrations* that[b] subtle matter produces on the retina.

This simple presentation of my view will perhaps make it seem probable enough, at least to those who know Descartes's philosophy and who are not content with the explanation this learned man gives of colors. But for you to be able to judge soundly of my view, it is not enough to have presented it; some proof of it must be given.

3. To do this, it must first be noted:

a) That sound is heard only by means of the vibrations in the air that disturb the nerve of the ear; for when the air has been withdrawn as much as possible from a pneumatic machine, weak sound is no longer transmitted in it, or is transmitted less as the air in it is rarefied.

b) That the difference between tones results not from the force of the vibrations in the air but from their greater or lesser frequency, as everyone knows.

c) That although the impressions objects make on our sense organs sometimes differ only quantitatively, the sensations the soul receives from them differ essentially. There are no sensations more contrary than pleasure and pain. Yet whoever scratches himself with pleasure feels pain if he scratches himself a little harder, because the degrees of motion in our fibers differ essentially in relation to the good of the body, and our senses instruct us only about this relation. It is likely that the sweetness and bitterness that cause such contrary sensations often differ only quantitatively, for there are people who find bitter what others find sweet. There are fruits that are today sweet and tomorrow bitter; a small difference in the bodies therefore enables them to cause quite contrary sensations. In a word, this is because the laws concerning the union of soul and body are arbitrary, and nothing in objects is like the sensations we have of them.

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[a] Part 2, on Method; ch. 4.

[b] *Dialogues on Metaph.* Dial. 12.

4. It is certain that colors naturally depend on the disturbance of the organ of vision. Now, this disturbance can be only weak or strong, and more or less frequent. But experiment teaches that the degree of strength of the disturbance of the optic nerve does not change the species of color, since the degree of daylight, on which the degree of this strength depends, does not ordinarily make us see colors of a different and entirely contrary species. It must be concluded, then, that the degree of frequency in the vibrations of the optic nerve, or in the disturbances in the spirits contained in it, changes the species of colors, and consequently that the cause of these sensations results basically from *the more or less frequent vibrations of the subtle matter* compressing the retina.

Thus, the same is true of light and the different colors as of sound and the different tones. The *loudness* of *sound* results from the degree of force of the vibrations in gross air, and *the diversity of tones* from the degree of frequency of these same vibrations, as everyone agrees. The *strength* [*force*] or brilliance of colors, therefore, also results from the degree of force of vibrations, not in the air, but in the subtle matter, and the *different species of colors* from the degree of *frequency* of these same vibrations.

5. Since the air is compressed only by the weight of the atmosphere, some time is required for a part of it to move an adjacent part. Thus, sound is transmitted rather slowly. It does only about one hundred eighty fathoms per second. But such is not the case with light, because all the parts of ethereal matter are in contact, because they are very fluid, and especially because they are compressed by the weight, as it were, of all the vortexes that are themselves compressed by an infinite force corresponding to the infinite power of the Creator, or at least an almost infinite force. Consequently, pressure vibrations, or the action of luminous bodies, must be communicated instantaneously or within a short time. And if the compression of the parts composing our vortex were infinite, pressure vibrations would have to occur instantaneously.

In his treatise *De la lumiere*, Huygens[a] concluded from the eclipses of the moons of Jupiter that light is transmitted about six hundred thousand times faster than sound. Thus, the weight or the compression of all the celestial matter is incomparably greater than that produced on the earth by the weight of the atmosphere. I believe I have established[b] elsewhere that the hardness of bodies depends on the compression of subtle matter. And if that is so, it must be extremely great, since there are bodies so hard that a very great force must be employed to separate their least parts. It seems to me that the ratio of the weight of the *ether* to that of the atmosphere is much greater than six hundred thousand to one, and that it might be regarded as almost infinite; for Cassini has observed the eclipses of

[a] Page 9.

[b] The *Search after Truth*, last chapter. The proof will be seen below.

the moons of Jupiter at different distances from the earth, and they do not agree with Huygens's conclusion.

6. Let us now suppose, therefore, that all the parts of the *ether* or of the subtle and invisible matter of our vortex are compressed with an almost infinite force by those surrounding it, and that each of its parts is very fluid, and is hard only through the motion of those surrounding it and compressing it on all sides. And let us see in the system I propose how it is possible for the impressions of an infinity of different colors or rays to be communicated without being confused. Let us see how ten thousand rays, which cross at one physical or sensible point, transmit all their vibrations through this point, since I have just proved that difference in colors can result only from the degree of frequency of these same colors. Manifestly, the world system that will elucidate this great difficulty will conform to the truth.

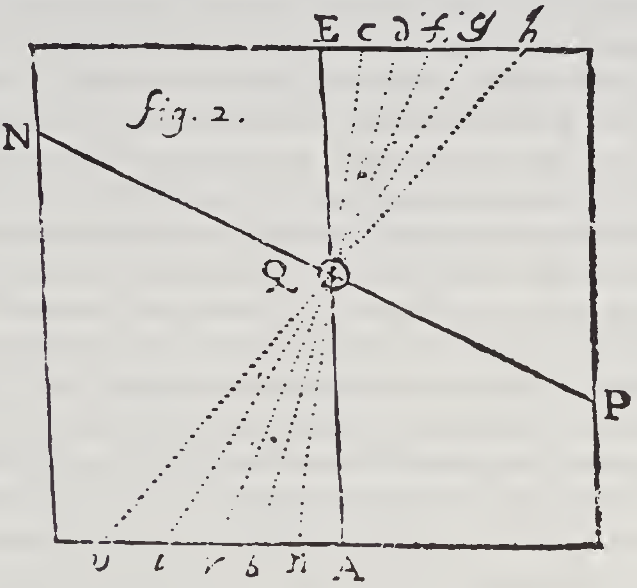
fig. 2.

Let APEN be the cross section of a room painted with an infinity of colors, and even let them be the most glaring colors possible, that is, white at A next to black *n*, blue *b* next to red *r*, yellow *i* next to violet *u*. If from all these points A, *n, b, r, i, u,* we draw straight lines that intersect at a point such as Q, and if we place our eye beyond at points E, *c, d, f, g, h,* we shall see all these different colors through the medium of the point of intersection Q. And since this figure represents only one row of colors, while as many rows must be imagined as the eye can distinguish parts in a sphere, the point of intersection Q must receive and transmit a very great number of different impressions without them destroying each other.

7. If the physical point or tiny ball Q were a hard body, as Descartes assumes, it would be impossible for the eye at E to see white at A, and for another eye at *c* to see black at *n*. For when a body is perfectly hard, if part of it moves somewhat,

or tends from A toward the optic nerve, for example, toward E, all its parts must tend in the same direction. Therefore, we shall not be able to see only black and white simultaneously through rays intersecting at Q.

Descartes also claims that red is produced by the revolution of tiny balls that is communicated from one to the other along the whole ray from the object to the eye. This view is untenable for many reasons. But it is enough to destroy it to consider that if the tiny ball Q turns on the axis PN from *r* where there is some redness to *f* where the eye is, it cannot at the same time turn on the axis *rf* from N where I again assume there is some redness to P where I assume another eye.

Furthermore, when I say that the rays intersect in the tiny ball or in the little vortex Q, I do not claim that these little vortexes are exactly spherical, nor that visible rays have the thickness of a tiny ball of the second element or of a small vortex. I do not specify what the grossness of these rays must be for them to be able to disturb the optic nerve sufficiently to make us see colors. But what I said of a single ball must be understood of a thousand or a million, if one ray to be sensible must be as extended as a thousand or a million balls or vortexes.

8. It is not possible, then, that the tiny ball Q, or any like it, can transmit the action of light appropriate for making us see all sorts of colors, given that these balls are hard. But if we conceive them as infinitely fluid or soft—as the simple idea of matter represents all bodies, since (a) rest has no force, and (b) each part of a body is indifferent to whether it is adjacent to another and must easily separate from it unless some force, i.e., some motion, restrains it (for we conceive in bodies no other force than their motion)—if, I say, we conceive these bodies as very soft, or rather, as I truly believe, as small vortexes composed[a] of an almost infinitely fluid and extremely agitated matter, they will allow of an infinity of different impressions, which they will be able to communicate to others on which they press and with which they are almost infinitely compressed. This is what we must try to explain and prove.

9. To do so, it must be well understood that reaction, which, like action, is communicated rectilinearly, is here necessarily equal to action, for this reason essential to the effect in question, that our vortex is almost infinitely compressed, and that consequently, there can be no void. If, for example, you push your cane against a solid wall, your hand and cane will be repelled with the same force by which they were impelled. The reaction will be equal to the action. Now, although rays are not hard like sticks, the same thing happens with respect to reaction due to the compression and fullness of our vortex. For if we suppose a cask full of water, or a balloon as in the first figure full of air, and if, after having fitted it with a pipe, we insert a piston into this pipe, the piston will be repelled as much as it is impelled. And if in addition we make a small hole in the middle of this piston through which water can pass and leave the cask, and if we push the piston, all the water compressed by it will at the same time, due to its fluidity, tend to withdraw from each point of the piston through action and through reaction it will approach the whole in its middle. For if we pushed the piston with

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[a] The proof and consequences of this will be seen below.

enough violence and frequency, the cask would burst at the weakest spot, wherever it might be, a sure sign that through the action of the piston the water presses the cask throughout; and if we pushed the piston ever so little, the water would immediately gush out through the little hole as a result of reaction. This is all because reaction is equal to action in the plenum, and water or subtle matter is sufficiently soft or fluid for each part to shape or arrange itself to satisfy every sort of impression.

10. It should be noted that the more forcefully the piston with the hole is pushed into the cask, the more forcefully the water, though impelled toward the concave surface of the cask, is repelled toward the piston and gushes out its opening. From this it is easy to judge that a black point must be more visible on white paper than on blue paper, because since white repels light more forcefully than any other color, not only does it disturb the optic nerve, but it causes the subtle matter to tend through reaction toward the black point with greater force. But if the ethereal matter were not infinitely soft or fluid, then as the tiny balls that transmit the impression of white are hard, they clearly would obstruct the impression of black, because as these balls resist each other, they could not tend toward the same black point. And if this ethereal matter were not compressed, there would be no reaction.

What I have just said about white and black must be applied to the other colors. But it would be difficult to do so in detail, and to respond to the difficulties many people might raise on the same subject; for objections on obscure matters are easily raised. But not all those capable of raising objections are in a position to understand the principles on which the resolution of their objections depends. It is not impossible to conceive how a sensible point of infinitely fluid matter pressed on every side receives an almost infinite number of different impressions at the same time, when attention is paid to two things: (a) that matter is infinitely divisible, and that the smallest sphere can correspond to all the parts of a large sphere; (b) that each part tends and moves in the direction in which it is less pressed, and that thus every soft and unequally compressed body receives all the traits of the mould, as it were, surrounding it, and receives them the more rapidly as it is more fluid and compressed. I therefore omit detailing the consequences following from the principles I have just explained, by which consequences it seems to me we can remove or at least diminish the extraordinary difficulty, that the rays of different colors must confuse their vibrations in intersecting. And this difficulty seems to me such that only the true natural system of subtle matter could entirely elucidate it. However that may be, I think I have clearly proved that *different colors* consist only in the different *frequency* of the pressure vibrations of subtle matter, as *different tones* of music result only from the different *frequency* of the vibration of gross air (as experiment teaches), which vibrations also intersect without destroying each other. And I do not think that the way all these vibrations are communicated can be physically explained unless the principles I have just set out are followed.

Moreover, it must not be imagined that what I have said about the tiny balls of the second element (which, far from believing hard, I regard rather as small vortexes of a subtle matter) must upset Descartes's physics. On the contrary, my view might serve to reform and perfect the general aspect of his system. For if my view can serve to explain light and colors, it seems to me suited to resolve, in conformity with the principles and method of this philosopher, the most general questions of physics, as, for example, how to explain the generation and surprising effects of light, as I am going to try to show.

The generation of fire.

11. As bodies cannot naturally acquire motion unless it is communicated to them by some others, it is clear that fire can begin to burn only through the communication of motion from subtle matter to gross bodies. Descartes, as we know, claims that only the first element communicates its motion to the third, of which gross bodies are composed, and sets it on fire. According to him, when we strike the steel, we forcefully detach a small part of the flintstone. (I should believe that it is rather the detached part of the steel that ignites, for when with a microscope we look at the sparks of fire we have collected, we see that it is the iron that has been melted and reduced to balls or shards, and I have noticed no change in the slivers broken from the flint. But basically this is of no consequence.) This particle, then, spinning around forcefully, drives out the tiny balls of the second element and makes the first element flow onto it, which element communicates to it part of its rapid motion making it appear on fire. This is roughly Descartes's view on the generation of fire. It can be found explained at greater length in the fourth part of his principles, nos. 80 and following. But if the tiny balls are hard and all touch, as he assumes in order to explain colors, we have difficulty in understanding how the first element could flow toward the detached part of iron, and in sufficient quantity to surround it and set it on fire—not only it, but all the powder of a cannon or a mine, whose effects are so violent. For the first element, in order to flow, cannot be any more than a very small portion of the subtle matter filling the small triangular and concave spaces that contiguous balls leave between them; but furthermore, the force that would make the first element flow by pressing the second is not great enough, as is easy to prove. Here, then, is how I explain the generation of fire and its violent effects on the assumption that the tiny balls of the second element are in fact only small vortexes of a fluid and very agitated matter.

12. But it must first be well noted that air is not necessary to strike a small spark of fire, though in the absence of air the spark is immediately extinguished and cannot be communicated even to gun powder, however flammable it might be. Experiment teaches that when a well-primed pistol is fired in a vacuum machine, the priming is not ignited for lack of air, and that it is even very difficult to notice any spark in it. Finally, everyone knows that fire is extinguished for lack of air and is kindled by blowing on it. This being assumed, here is how I explain the generation of fire and its quick effect in mines.

If the steel is struck in a vacuum, a particle of the iron or steel is broken off by the force of the blow. Spinning about and quickly striking several small vortexes of the second element that necessarily counterbalance each other, this particle easily upsets their equilibrium, for very little force is required to upset it; and consequently it causes the parts of the vortexes to surround it, and then to agitate it and set it on fire. But the matter of these vortexes (which cannot be imagined too agitated), after having had a great deal of irregular motion for an instant, quickly regroups, in part, into new vortexes due to the resistance it finds to its motion, and in part escapes through the interstices of surrounding vortexes, which interstices become larger when these vortexes approach the detached piece of iron. These latter vortexes are not upset because the round or roughly cylindrical iron particle, turning on its center or lengthwise, no longer strikes the surrounding vortexes in a way to upset them. All this occurs almost instantaneously when the iron and flint are stuck in a place void of air, and the spark is then almost invisible and does not last.

13. But when the steel is struck in the air, the part broken from the iron, by forcefully spinning about, collides with and disturbs not only several small vortexes but many parts of air, which, being branched, strike and consequently upset many more vortexes by their motion than the iron particle alone. As a result, the subtle matter of these vortexes then surrounds the air and fire gives them sufficiently diverse motion to forcefully repel the other vortexes, and to excite in us a lively sensation of light. Thus, the sparks must be much more brilliant in the air than in a vacuum; they must also last longer and have more force to ignite gun powder. And this powder does not lack subtle matter that sets it on fire or in motion, whatever quantity of powder there might be, because it is not only the matter of the first element, as Descartes believed, but much more that of the second, or of the small vortexes that have been upset, that produces the extraordinary motion of fire in mines. If you reflect on what happens to fire when you blow on it, i.e., when you impel a great deal of air against it, you will not doubt that the parts of air are well suited to upsetting a great many vortexes of the second element and, consequently, to causing subtle matter to communicate to the fire a part of its motion. For only from this matter can fire draw its force or motion, because it is certain that a body can move only through the action of those surrounding it or striking it. The prodigious effects of large heat mirrors sufficiently prove that subtle matter is the true cause of fire. With the rays of light intersecting at the focus of these mirrors, the small vortexes of etheral matter of which these rays are composed must change their circular motion in different directions, and must all tend to move in the same direction, i.e., along the axis of the cone of reflected light, and to pass through and thus upset the parts of the bodies they meet.

What follows to the end of the work was not in the previous editions.

PROOF OF THE ASSUMPTION I MADE*: that subtle or etheral matter is necessarily composed of small vortexes, and that they are the natural causes of all the changes occurring in matter, which I confirm by an explanation of the most general effects of physics, such as the hardness of bodies, their fluidity, their heaviness, their lightness, light and the refraction and reflection of its rays.*

14. The assumption I made that subtle or ethereal matter is composed only of an infinity of small vortexes that turn on their center with extreme rapidity, and

that counterbalance each other like the large vortexes Descartes explained in his *Principles of Philosophy*, this supposition, I say, is not arbitrary. And as I am convinced that it is the true principle of general physics on which particular effects depend, I believe I must prove it and deduce from it the explanation of some truths of consequence. But I beg the reader to compensate with his attention for the principles I assume to be known to true physicists, and to suspend his judgment until he has read and reflected awhile on my proofs.

The rapidity of the motion of subtle matter is clearly proved by the effects of thunder, or rather by those of gunpowder. For it is clear that a body is moved only because it is impelled, and it can be impelled only by the one immediately touching it. Thus, the ball leaves the cannon only because it is impelled by the gun powder, and this powder is set on fire[a] or in motion only by the subtle matter touching it and penetrating it. And consequently, subtle matter moves with great rapidity, because it is the primitive cause of the ball's violent motion.

It is further necessary that it group and move in small vortexes that counterbalance each other by their centrifugal forces, and that the vortexes establish a kind of equilibrium among themselves so that they might all be equally pressed or compressed. For since every body goes in the direction in which it is less pressed, if a given part of the ether were less pressed than the others, it is clear that the others would fall back on it. We see that if all the ethereal matter were not equally compressed, different colors[b] or different pressure vibrations could not be instantaneously transmitted across vast spaces without any change in the frequency of their vibrations.

It therefore appears to me certain from what I have just said, and from other reasons I do not believe necessary to relate, that the entire motion of etheral matter is not used in the roughly circular or elliptical course of the large vortexes, which carry the main planets around the sun, and their moons around the sun and the planet around which they revolve. All the particles of this matter are in very rapid motion. And because the universe is compressed by an infinite, or almost infinite force, and because there is no void, these parts of subtle matter, mutually resisting each other by their different particular motions, must continuously divide and form small vortexes, and in these others yet smaller, and still others less stable in the concave interstices that contiguous vortexes leave between themselves. All this is because matter is infinitely divisible, and because no part offers any resistance to being divided, since rest has no force, and because the hardness of bodies results only from the motion of those compressing them, as I have proved at length in the last chapter on Method.

It therefore appears to me evident that subtle matter, whose rapidity is extreme, groups and thus moves in small vortexes, and that these vortexes counterbalance each other. For if this matter moved in the same direction, all the bodies it surrounds would be transported in its flow with more speed than lightning, for the speed of lightning, as well as that of a cannonball, has as a primitive cause the

[a] See the article above on the generation of fire.

[b] Above, no. 3.

speed of ethereal matter. This is so for the same reason that the earth, the air, cities, and so forth, are carried around in twenty-four hours by the large vortex surrounding us. But as these little vortexes are required by their mutual resistance to arrange and counterbalance themselves in such a way that they can complete their motion by establishing among themselves a kind of equilibrium, they only compress the parts of gross bodies against each other when the parts of these bodies are immediately touching. In this way they make them hard so that to break these bodies, or to separate their parts, a force must be used, i.e., some motion (for the force of bodies[a] is only their motion) that can overcome the centrifugal force of these vortexes that compress the parts of hard bodies between them.

Thus, since the vortexes of ethereal matter that are mingled with the powder of the cannon, and that surround it, are in a state of equilibrium, they cause no change in it. Far from moving and separating them, they compress its parts. But when it is ignited, i.e., when the equilibrium of the vortexes has been disturbed, and the parts of the powder are enveloped and are floating in the flow or the small new torrents of the matter from several upset vortexes, as has already been explained[b] and, I believe, sufficiently proved, then the parts of the powder receive from them some of their motion, of which they communicate to the ball only a sixth part, assuming that the best powder with which the cannon has been loaded occupies at its core only the length of the diameter of its caliber, since the hollow cylindrical surface against which the powder acts is equal to six circular planes of the diameter of the caliber. I said that the powder receives only *some* of the motion of the matter surrounding it, not only because not all of the powder is ignited, nor all at the same time, but also because it floats in the flow of the matter carrying it only for a short time. For when a body is moved only by the communication of motion from the fluid surrounding it, it does not instantaneously receive as much motion as the fluid has; but moreover, since the small streams of subtle matter veer in every direction, they mutually resist each other.

15. It is evident, then, that the motion of ethereal matter is of an awful rapidity, because a very heavy ball, which receives only a very small part of it, leaves a cannon with so much speed. Now, since it has been demonstrated[c] that the centrifugal force of bodies is equal to the square of their speed divided by the diameter of the circle in which they are constrained to revolve, you should not be surprised that the hardness of iron should be the effect of compression by the small vortexes of subtle matter, especially if you assume them to be very small, such that several million diameters of these vortexes, for example, would hardly equal a twelfth of an inch. Now, some of them must be very small, because they easily pass through the pores of not only glass in order to transmit the action of light, perhaps a hundred or a thousand in each pore, but also those of steel. For since there is no force in bodies other than their motion, a sword resists when it is bent and strives to straighten itself only because the small vortexes of ether in its

[a] Last chapter on Method.

[b] No. 12.

[c] The demonstration is at the end of this work for those who do not know it.

pores are not free to perform their circular motion, the curvature of the sword necessarily changing the round figure of the pores in which they are constrained to revolve into an ellipse. If, then, you multiply the astonishing speed of the subtle matter by itself and then divide it by the almost infinitely small size of the small vortexes' diameter of revolution, you will find a quantity of centrifugal force that is, as it were, infinitely great in relation to other forces of the same nature—a force such that you will perhaps cease being surprised by the hardness of diamond, which certainly can be the effect only of the ether's compression, just as I proved for the hardness of all bodies.

16. If you wish to compare the centrifugal force of the small vortexes to that of the large ones in order thereby to judge whether the former of these forces can be the cause of bodies' hardness and elasticity, you can compare the centrifugal force had by a very small particle or a physical point to recede from its center with the centrifugal force had by a similar part of the earth to recede from the sun, which is the center of its revolution, or with a similar part of the volume of ethereal matter that is in equilibrium with the earth and that with a centrifugal force equal to its own constrains it to remain at the same distance from the sun.

To do this, let us suppose that the speed of a physical point of a small vortex is only ten times greater than that of a ball leaving a cannon. This is surely to decrease greatly the speed of the ether; so much is clear from what I have just said. Let us also suppose that a physical point of earth revolving annually about the sun has a thousand times more speed than a ball. This is perhaps to increase its motion. We can now calculate it, for we know roughly the distance through which the ball passes in one second, and thereby the distance it would pass through in a day or a year. And we also know that the distance from the earth to the sun is at least ten thousand terrestial diameters, and we thereby know the distance through which the earth travels in a day or a year. We can therefore discover the approximate ratio of these two speeds, that of the earth around the sun to that of the ball, and consequently to that of the subtle matter we have proved to be at least ten times greater than that of the ball.

Supposing then that the speed of a physical point of a small vortex is 1/100 the speed of a physical point of the large vortex. The square of 1/100 will be 1/10,000. Let us now look for the ratio of the diameters of the revolutions. The diameter of the earth's revolution is at least twenty thousand terrestrial diameters, and each diameter contains at least 6,000,000 fathoms. It contains 6,538,594 according to the measurement conducted by the gentlemen of the Académie. But I ignore the five hundred thousand or so fathoms, although this number greatly increases the ratio of the centrifugal force of the small vortexes to that of the large ones. And finally each fathom will contain as many pores or small vortexes. Those who make use of good microscopes will not doubt this. For there are animals so small that a single eye of a butterfly would contain[a] twenty-four to twenty-five million of them. You will doubt this even less if you attend to the organic parts of insects, or rather, of the seeds from which they are born, for their tiny organs can receive their figure and different consistency only through the pressure of the small vortexes surrounding them. Consequently, I could justifiably further decrease the diameters of the small vortexes by several million million; in a word, I could give them an indefinite smallness, which would infinitely increase their centrifugal force.

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[a] De Puget's *Lett.*, p. 121.

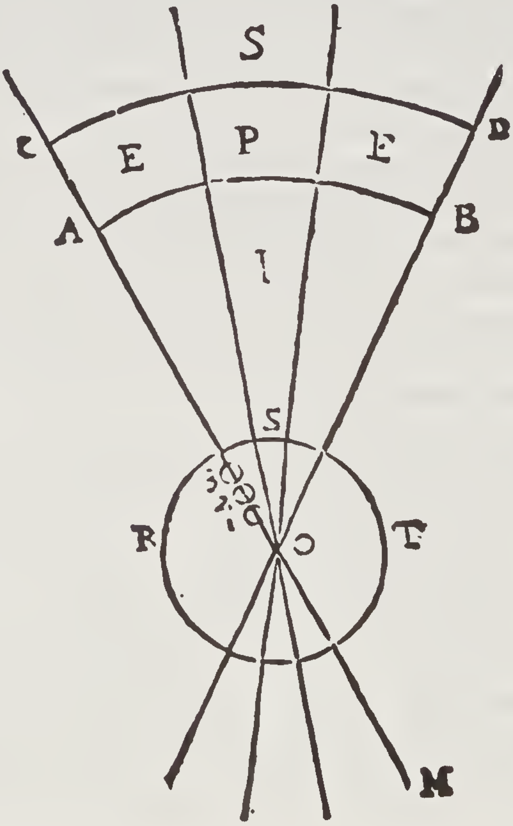
Thus, on the assumption that one fathom contains only 6,000,000 times the diameter of a small vortex, in order to find out how many times this diameter is contained in that of the earth's revolution around the sun, i.e., following the assumption, in 20,000 times 6,000,000 fathoms, we must multiply 6,000,000 by itself and the product by 20,000, and we shall see that the diameter of a small vortex will stand to that of a large one as 1 to 720,000,000,000,000,000. Now, the centrifugal force of bodies is equal to the square of their speed divided by the diameter of the circle in which they are compressed and constrained to revolve. Therefore, by dividing 1/10,000—the square of the small vortex's speed compared to the large one's—by 1/720,000,000,000,000,000—the small vortex's diameter compared to the large one's—we shall have 720,000,000,000 as the centrifugal force of a physical point of the small vortex, which will stand to that of a physical point of the large one as this huge number stands to unity. Although not very exact, this calculation might give some idea of the excessive centrifugal force of small vortexes, which alone is the cause of the hardness of bodies, and which resists our efforts to break them.

17. With respect to the fluidity of bodies, of water, for example, we clearly see without pausing over the matter that small vortexes can communicate this quality to them. For not only do they surround and compress on every side the particles of which fluid bodies are composed, for it can be only their pressure that gives these particles their figure and consistency according to what I have just said, but they also keep them apart and make them slide over each other, in which their fluidity consists. And since they are also surrounded by air and are heavy, they slide between them and separate from them only after some time.

We also understand through the generation of fire how very different fermentations are produced by mixing different liquids together. For acids mixed with alkalis more or less upset the small vortexes and consequently cause greater or lesser fermentations and motions. But the particular reasons for each fermentation cannot be clearly explained. Let us leave conjectures, then, and come to weight, whose cause seems so hidden.

18. Some philosophers, not having well understood Descartes's view, or rather, having understood it from his letters published after his death instead of from his *Principles of Philosophy* published during his lifetime, attribute the weight of bodies to the centrifugal force that subtle matter draws from its circular motion around the earth. But it would be necessary, as has been proved by several people, and even by those who are of this opinion and wish to support it, it would be necessary, I say, for this matter to revolve about seventeen times faster than the earth without changing the perpendicular direction of a falling feather, and without offering the least resistance to a man walking in the opposite direction of its motion, although it offers a great deal of resistance to our effort to

raise ourselves from the earth, which seems to contain a manifest contradiction. For if the subtle matter, revolving ten times faster than the earth, were to pass through a feather without changing its perpendicular fall, i.e., without communicating to it any of its motion, it seems to me that bodies thrown in the air should never fall down, the subtle matter passing through without repelling them, and its centrifugal force not being even comparable to its speed. I believe, on the contrary, it is evident that bodies enveloped in a complete fluid, or one filling an entire space, and that float in this fluid, whatever its nature might be, must receive its impression and after a while even travel almost as fast as the fluid. Otherwise the generation of fire would be impossible. The effects of gunpowder and thunder would be miraculous or supernatural. For the powder that impels the ball would be moved without being impelled by the flow of subtle matter, which is the only body with great motion immediately touching the powder, and this is contrary to the natural law that a body can be moved only by one touching it. I believe, on the contrary, that the planets revolve on their center only through the motion they receive from the fluid surrounding them; I mean that if God had not created them in motion, but only the subtle matter surrounding and penetrating them, by the end of several months or several years they would revolve as they now do. I do not speak of several other objections raised against this explanation of weight, such as this: that bodies would have to fall perpendicularly to the earth's axis and not directly toward its center, which has been answered with



great ingenuity and subtlety. I leave the other objections against this view on weight, I say; here is mine. I assume that close attention is paid to the centrifugal force of the small vortexes, which are pressed and counterbalanced in every direction.

Let us conceive of a stone P surrounded on every side by the ether E, E. It is clear that the ether below the line AB, concentric with the surface of the earth, as well as that above the line CD, is in perfect equilibrium; for being of the same nature, and composed of small vortexes, all its parts are equally pressed and counterbalanced by their centrifugal force. But the ethereal matter between the lines AB and CD is not in equilibrium with the stone, because the parts of the stone have no circular motion or centrifugal force by which they act and tend to recede in every direction as do the small vortexes. Thus, the ether must seize the top of the stone and make it descend, for two reasons: one, because the small vortexes apparently can have more room above than below, since the speed of the ether is greater below than above, its various distances from the center standing to each other reciprocally as the square of its speed at these distances, as we shall soon see. But the other reason, which I believe to be the main and true one, is that the reaction undergone by the small vortexes is much greater on the side of the large terrestrial vortex than on any other. This is why gross bodies fall directly toward the center of the earth, as I am going to try to demonstrate.

It is certain that the earth RST, or its center O, is equally pressed above and below, left and right, in relation to its own vortex, which compresses it equally on every side. Thus, the action of the centrifugal force of all the small vortexes above, aligned along AO, is returned to them due to the immobility or resistance of O, which is equally impelled by the vortexes below. If we imagine two small vortexes marked 1 and 2 set on top of each other, and compressed by those surrounding them on every side, the action of the centrifugal force of the first, by which it tends to recede toward O, will be entirely returned to it due to the immobility of the center O. The second vortex will be repelled even more from the center than the first, for besides the fact that its own action will be returned to it along the line OA, it will also be impelled by the reaction of the first. And if you set up a third one, it will be repelled even more than the second, and so on. But it must be noted that these additions diminish as they are shared by a greater number of vortexes receding from the center, so that at a certain distance from the center they cease, or rather, become almost nil.

But if we now conceive, instead of a twentieth vortex, a small solid body without motion, or without a centrifugal force that might fall back on it, it will be forced up by the nineteen vortexes below it, which are in equilibrium with the nineteen adjacent vortexes; but it will not be repelled as much as the twentieth, since it does not have, like the twentieth, a centrifugal force capable of falling back on it and driving it from the center of the earth.

From this it therefore follows that all the vortexes below the line AB and above CD at an equal distance from the center O are in equilibrium and undergo the same reaction from bottom to top. But those between the line AB and CD are not. For since there are more vortexes in the area E, E than in the stone P, the ether in

E, E is forced up by the reaction it undergoes proportionately more than the stone since there are more vortexes in it than in the stone. Thus, since the ether is forced up more than the stone and is compressed on every side, it spreads out over the stone due to its extreme mobility and fluidity, and impels it toward the center of the earth. This is the same reason that water, being more impelled from above to below than wood, slides under wood and makes it rise.

Let us now imagine that the large vortex of subtle matter surrounding the earth, being equally compressed on every side, presses the matter it contains toward the earth, and that it is composed of tiny balls that are infinitely hard and solid and consequently, inelastic and without centrifugal force, instead of small vortexes. The tiny balls 1, 2, 3, and so on, will bear the weight compressing them on both sides from the center of the earth; but they will not rebound, since they have no elasticity. For we saw in the explanation of the laws of motion that it is elasticity that makes bodies rebound, and we have just seen that the elastic force of bodies consists only in the centrifugal force of the small vortexes in their pores. Now unless they rebound, the stone P will remain in equilibrium with the ether E, E surrounding it.

Let us again examine whether the stone's weight does not result from the fact that the subtle matter revolves around the earth much faster than the stone, and that thus tending to grasp its top by the centrifugal force resulting from its greater speed, it impels the stone toward the earth. But to make this investigation more useful and more agreeable, let us first seek the cause of the weight of the planets that forces them to revolve around the sun, in order to see whether it is the same cause that makes heavy bodies fall here below.

I assume (a) that the matter contained in the large vortex whose center is the sun and that carries the main planets and their vortexes, is extremely agitated, and that it is constrained to revolve only because it is equally compressed on all sides by the matter surrounding it; (b) that assuming this exterior compression to be equal, it equally presses all the matter of the vortex toward the sun, which is its center; (c) that through the centrifugal force it derives from the speed of its motion, the compressed matter counterbalances the force of the compression impelling it toward the sun. This compression, or kind of weight of subtle matter, is equal to the centrifugal force. For all the parts of the universe are, or tend to put themselves, in equilibrium through this general principle of physics, that every body less impelled in one direction than another moves until equally impelled in all directions. This assumed, and setting aside the difficulties that might be raised against these assumptions, let us imagine that all the celestial matter of this large vortex, or only that in the plane of the ecliptic from which the planets hardly deviate, is divided into layers, from the surface of the vortex to the sun. All its layers will stand to each other as the squares of their diameters or of their distances from the sun. From this it follows by the general principle of mechanics, or the common notion, that equilibrium obtains only when contrary forces are equal, from which it follows, I say, that in order for these superior and inferior layers to be in equilibrium and also to carry—not by their simple speed, but by the centrifugal force resulting from their speed—the weight of their compression toward the sun, their circumferences, as will be demonstrated in what follows, must stand to each other in inverse proportion to the squares of their speeds. For the centrifugal force of each point of these layers is equal not to its speed but to the square of its speed divided by the diameter of its revolution. If needed, the proof of this will be found at the end of this volume. The speed of the layers, increasing inversely with the square roots of the layers, or of the diameters, or, finally, of the distances from the sun (for the circumferences or the layers are in the same proportion as their radii or diameters), the speed of the ethereal matter near the sun, I say, must have an awful rapidity. For assuming that the distance from here to the center of the sun is thirty million leagues, and that the distance from the surface of the sun to its center is thirty thousand leagues, for equilibrium to be preserved the speed of the subtle matter near the sun must stand to that surrounding the earth as the square root of thirty million stands to that of thirty thousand. Yet the celestial matter is everywhere in equilibrium up to the surface of the sun, where its equilibrium is upset because the surface of the sun, which only turns in twenty-seven and a half days, would have to turn in about three hours to preserve equilibrium as do the superior layers of the vortex of which it is the center. Thus, the subtle matter at the surface of the sun does not have one two-hundredth of the circular speed necessary to support the compression or weight of the vortex through its centrifugal force, for whatever impels matter toward the center around which it revolves can be called weight. The calculation of the circular speed celestial matter must have at the surface of the sun to preserve the equilibrium there can be seen in the sixth chapter of Villemot's new system, a work that marks the author with great strength and scope of mind.

It seems to me to follow from what I have just said that the sun is a fire, i.e., a mass of disturbed vortexes, and that since it is unable to support the weight of the vortex solely by the centrifugal force that would be generated by the circular motion of the matter of which it is composed, it supports it by repelling the layers next to it, but not by a uniform pressure like that of the superior layers, which would only preserve equilibrium in the vortex's matter, and not produce any heat or light in it; for equilibrium alone produces nothing. Rather, it supports this weight with very rapid vibrations that animate, as it were, all the matter of which different bodies are composed, and produce all the changes we see at different seasons; but this is not my topic.

By the principle of mechanics that all the spherical layers from the surface of the sun to the edge of the vortex cannot be in equilibrium and also carry the compression or weight pressing everything toward the center by their centrifugal forces alone, it is therefore certain that the inferior spheres cannot stand to the superior inversely as the square of their speeds. From the observations of astronomers, it is also certain that the squares of the times of revolution of the principal planets around the sun, and especially of the moons of Jupiter and Saturn around these two planets, stand to each other as the cubes of the distances from the center of their revolution. From this it follows that the astronomical observations agree perfectly with what has just been proved by reason. For if in the ratios yielded by observation we substitute for the times their values, i.e., the planets' revolutions divided by their speeds, we shall find the same ratio as that which according to reason is necessary to preserve equilibrium in the layers of subtle matter. I shall soon give the specific operation. The planets are thereby seen to have the same speed as the layers surrounding them, or rather, to complete their full revolution in the same time. I say their full revolution, because the planets must go somewhat less fast when their layers increase their speeds, and somewhat faster when their layers go more slowly at different parts of their revolution. But they complete the full revolution in the same time as their layers, for otherwise after their revolutions they would not be at the same distance from the sun, nor would moons be at the same distance from their planets.

We see, then, that the true weight of the planets and the spherical layers, (a) which impels them toward the center of the vortex, (b) which forces them to revolve, and finally (c) which they resist by the centrifugal force generated by their speed, springs not from the center of the vortex but from its exterior compression. The weight of bodies near the earth or near the planets, on the contrary, results from the reaction this same exterior compression undergoes at the center of the vortex, which is equally pressed in the opposite direction on all sides. As I have just explained above, this weight results from the centrifugal force of the small vortexes that, like so many springs wound up by the compression they undergo due to the immobility of the planet or the earth, seize the top of partly inelastic gross bodies; for the small vortexes can be considered as springs, since without them nothing would be elastic.

It should be carefully noted, then, that when the inferior layers resist the exterior, or carry the weight of the vortex only by their centrifugal forces, Kepler's rule must be exactly observed for equilibrium to be preserved. This is evident through reason, and certain through astonomical observations. Now, when the layers are too distant from the center of the vortex, the reaction that results from the compression there, weakening and dissipating with the distance, does not reach these too distant layers, and does not combine with their centrifugal forces (or does so very little) to support the weight of the superior layers. Thus, the moons of Jupiter and the layers carrying them must follow Kepler's rule.

For the same reason, if the layer of subtle matter surrounding the earth supported the compression of the vortex solely by its centrifugal force, or, what comes to the same, if it caused weight by this kind of centrifugal force, this layer of subtle matter would demonstrably have about sixteen times the speed of the earth's equator. But the reaction resulting from the compression at the immobile center combines sixteen times as much force as the centrifugal force of this layer to support the weight of the superior layers and preserve equilibrium. And it is this concurrence and this reaction that is the cause of the true weight of gross bodies. For since according to Kepler's rule the layer of subtle matter surrounding us must have seventeen times more speed than the earth in order to preserve equilibrium by its centrifugal force, it follows that if it revolves less quickly, another force equal to that it lacks must be added to it; otherwise the equilibrium would be upset. Given that the tendency of the subtle matter from the center toward the circumference, or the resistance it offers here below to the superior layers is always the same, whether or not it revolves seventeen times faster than the earth, because equilibrium must be preserved and the superior layers supported, it follows that we can conclude nothing of certainty about the speed of subtle matter, neither by comparison with the speed of the moon nor by following Kepler's rule.

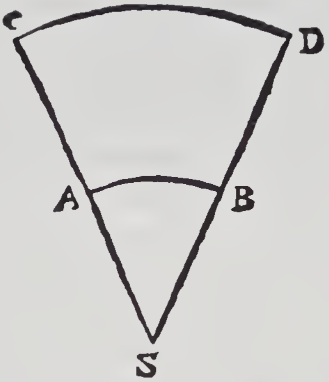
It should be noted that Kepler's rule has only the two proofs I have given; one is drawn from the principle of mechanics, and it is very certain. But this is because it assumes that the celestial layers are mutually resisted and counterbalanced only by their centrifugal forces. Now, certainly this is not true with respect to the layers near the centers of vortexes. The other, which is drawn from astronomical observations, is quite adequate for the planets and the distant layers carrying them. But it is evident that there cannot even be observations to determine the speed of celestial layers right next to the planets. On the contrary, observations teach us that neither the sun, nor the earth, nor Jupiter revolves as fast as is required by Kepler's rule—in my view good enough evidence for judging that the subtle matter immediately surrounding them does not follow that rule. But there are so many other convincing proofs that matter does not revolve seventeen times faster than the earth and it is so easy to discover them that I would fear boring the reader if I stopped to relate them.

In order to explain better how the speed and centrifugal force of the small vortexes is the general principle of natural effects, I am going to try to prove that certain properties of light uniquely depend on it, and especially that of reflecting and undergoing refraction on, or rather, near the surface of bodies; but I shall do so after having given the demonstration I just promised, and did not produce, because some readers do not need it and most will not be able to understand it or will not wish to read it. Here is that demonstration.

PROOF OF WHAT *I just said: that if in the known proportion of the times of the revolutions of planets to their distances from the sun we replace times by their values, we shall find the same proportion as that preserving equilibrium in the celestrial layers of the vortexes.*

Astonomical observations teach that the squares of the times of the revolutions of planets stand to each other as the cubes of their distances from the common center of their revolution. Thus, tt:TT:: d^3:D^3, taking t for the time of revolution of the inferior planet, and d for its distance from the center, and likewise for T and D and the superior planet.

This assumed, and taking v for the speed of a point B of the circle or inferior arc AB, and x for that of a point D on the superior arc CD, the time t of the revolution of the point B around the planet or sun S will be c/v and the square tt will be cc/vv, taking c for the arc or the circle AB; for time is equal to distance divided by speed. And for the same reason, we shall have TT$=CC/XX$, taking C for the arc or superior circle CD. Therefore, since the planets revolve with the same speed, or complete their revolution in the same time as the fluid that



surrounds and transports them, we shall have $tt:TT$. or $cc/vv:CC/XX::d^3:D^3$, or, by replacing the circumferences by the diameters proportional to them, $dd/vv:DD/XX::d^3:D^3$. Therefore, $d/xx=D/vv$. According to observations, it must be that d stand to D, or c to C, as xx to vv, i.e., that the square of the speed of point B, or of the arc AB, which travels with the same speed, stands to the square of the speed of the arc CD, as the arc CD to the arc AB, i.e., in inverse proportion of arcs, circles, or diameters, which causes the equilibrium in celestial matter.

But had not astronomers identified by their observations the ratio of the time of the revolutions of the planets to their distances from the common center of their revolutions, we could discover it in the following way from the knowledge we have of centrifugal forces. For in a vortex, the sphere composing it must be counterbalanced and in equilibrium because if the sphere represented by the arc AB were not in equilibrium with that represented by the arc CD, it would put itself in equilibrium by the principle that every body travels in the direction in which it is least pressed. Now, in order for the inferior spherical layer AB to be in equilibrium with the superior spherical layer CD, or for it to carry equally the weight of the vortex, their centrifugal forces must, by the general principle of mechanics, stand in inverse proportion to them. Thus, since the centrifugal force of a point of the ethereal matter composing the inferior layer AB is vv/d by the demonstration[a] of centrifugal forces, the force of the entire layer will be $vvcc/d$. And for the same reason, that of the superior layer will be $XXCC/D$. Now, since these two forces must be equal in order equally to resist the compression of the vortex, we shall have the equation $vvcc/d=XXCC/D$, or $vvc=XXC$, because c/d equals C/D, or finally $vvd=XXD$. By replacing v and x in this last equation by their values, viz., the circumferences divided by the times of revolutions, or the circumferences by the diameters proportional to them, we shall have $D^3/TT=d^3/tt$, or $tt:TT::d^3:D^3$, which is precisely what astronomers have discovered by their observations. Thus, reason agrees with experience in this, because all celestial matter is, or tends to put itself in, perfect equilibrium. I come to the properties of light.

19. When a ray of light AC is in a rare or subtle matter like air and obliquely meets the surface MN of a transparent body denser and heavier than air, like

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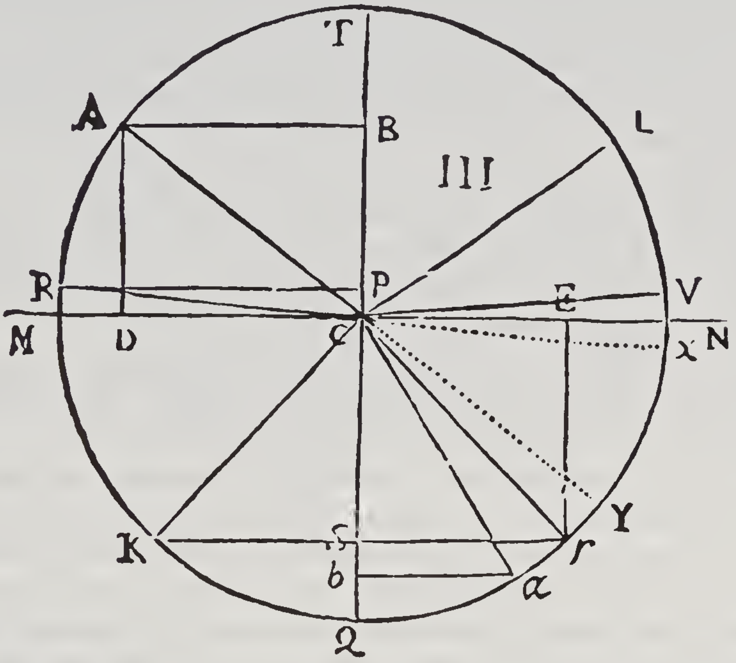
[a] This demonstration is at the end of this volume.

water or glass, experiences teaches that this ray or its action divides along two lines, one of which enters the glass and thereupon deviates toward the line TC perpendicular to the line MN separating the air and water, while the other is reflected along a line that with the same perpendicular makes an angle of reflection equal to the angle of incidence ACL.



Experience teaches:

a) that if a ray of light passes, for example, through the point R right next to the surface of the water and meets it at point C around which the circle RTVQ has been described, this ray will be refracted and pass through a point such as *r*, and that it will also be partially reflected in skimming the line MN.

b) It must be noted that the sine RP of the angle of incidence RCT, or the half-diameter RC, stands to the sine *rs* made by the refracted ray *r*C of the level ray RC as the sine of every other angle of incidence such as AB stands to the sine *ab* of its angle of refraction; that is, if RC stands to *rs* as 4 stands to 3, AB will stand to *ab*, as 4 stands to 3.

c) But if a ray, or its action traveled from water to air along the line *r*C, it would be refracted at point C, and skimming the line MN, it would go through point R. It would also be partially reflected toward K and would make in the same water an angle of reflexion equal to the angle of its incidence *r*C*s*, and its sine K*s* would be equal to the angle of refraction of the level ray RC that passed from air into water. In a word, rays passing from one medium to another follow the same path in both directions. Those who treat optics[a] number this among the axioms, for there is no experiment in dioptrics that does not confirm it, and we shall see the reason for it.

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[a] Newton, page 5 of his *Opticks*.

d) From this axiom that is the foundation of dioptrics, *that rays passing from one medium to another follow exactly the same path in both directions,* it follows that almost all the rays in air meeting the surface of water, however level they might be, enter it, even if the angle made by the level ray with the surface should be only a second or a third. [It also follows] that none of those going from water to air enter it so long as the angle they make with the surface is less than 41 degrees 25 minutes, which is the value of the angle *r*C*s*; the ratio of the refraction of water to that of air being 3 to 4. But if the rays were to leave glass to enter the air, none of the rays would do so as long as the angle it made with the surface was less than 49 degrees 5 minutes; the ratio of the refraction of glass to that of air being 20 to 31.

e) It should be noted that if the obliqueness of the angle *r*CE of light falling from water on the surface of the air is increased somewhat, say one degree, almost all the rays then enter the air, and appear to do so as abundantly as if the angle were increased tenfold.

f) Finally it should be noted that the heavier or more dense transparent bodies are, the greater the refraction of rays entering them is. These experiments assumed, let us now look for their physical explanations.

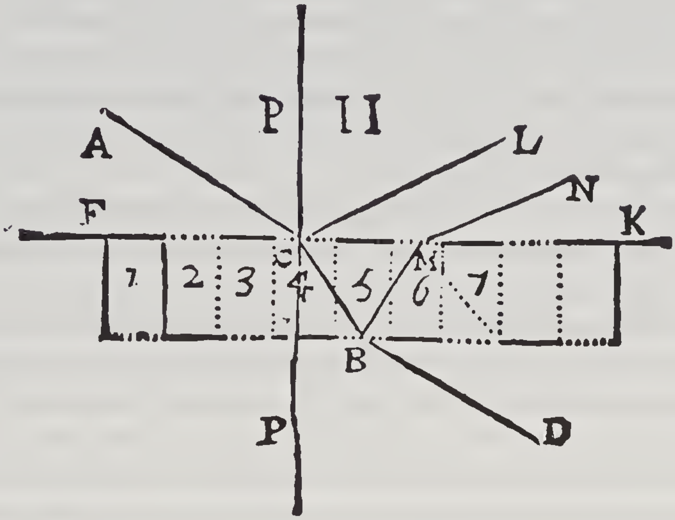
It should not be imagined that the reflection of rays occurs as does that of hard bodies rebounding against a flat surface. Since everything is a plenum and is infinitely compressed, rays are reflected and transmit their action without the small vortexes of ether changing place. Only pressure without motion is to be found here, unless motion is conceived as necessary for pressure vibrations, and rays are variously either reflected or refracted along the straight line of the various determinations of pressure.

It is ordinarily believed that rays are reflected only because they strike the solid parts of glass that resist them. But this so natural and plausible opinion is untenable for several reasons.

a) There is no likelihood that the most oblique rays on the surface of the water or glass, which skim it, could easily enter it, the greater part of them doing so without meeting gross parts which would make them reflect, and that none of the rays which would travel from glass to air could do so unless the angle of their obliqueness were greater. For can we believe that air, which transmits light so easily, has incomparably more gross parts to make it reflect than water and glass, and that there are not at least some rays that leaving the glass are able to find passage to the air or to transmit their action to it when the angle of obliqueness is 39 degrees or less?

b) Can we conceive that none of the rays that would leave water or glass could enter the air when the angle of their obliqueness is less than 40 degrees because the gross parts of air make them reflect, and that however slightly the angle of obliqueness increases, they almost all enter it, and apparently as many when the angle is increased by one degree as by twenty? Does not this clearly indicate a cause of the reflection of rays occurring only on the surface of the air, a cause other than collision with its gross parts? But here is another, more demonstrative proof.

If you make a small hole in a card that you expose to the sun or to daylight, and place below it a piece of glass on which the intercepted ray falls, you will see two small illuminated circles, one of which is seen by the light reflecting at the surface of the lens, and the other by the light reflected at the inferior surface of the air when the ray enters it. Here is the path it follows, assuming the glass to be flat and of equal thickness.



Striking the glass FK at point C, the intercepted ray AC reflects to L; diminished by the reflected light, it enters the glass and is refracted toward B; from B it is again refracted toward D, and diminished by the direct light, it reflects to M; and diminished by the light reflected toward 7 by the second meeting with the air, it finally is refracted toward N, and the line MN, which according to experience and the laws of optics is parallel to CL, is that of the ray which makes us see the less illuminated of the small circles, and the ray derives its light only from the light reflected from the ray CB while passing from the glass to the air below. Now, the inferior surface of the glass cannot be said to reflect the ray BMN; only subtle matter or the gross parts of air can do so. Experiment teaches that it is not the gross parts of air. For when a vacuum machine is used on the glass, and as much gross air as possible has been pumped from it, no perceptible change is brought about in the force of the ray reflected below the glass. Now, although not all the air can be removed, according to Boyle not the ten-thousandth part remains. So little remains that a feather seems to fall in it as fast as lead, and it is certain that the slow fall of a feather results only from the resistance of air. It is evident, then, that the reflection of rays does not result from collision with the gross parts of glass, water, air, or as I believe, from any other gross body, as will be seen in what follows.

But what then becomes of the rays that encounter the solid particles of which glass and all other bodies are composed. I believe they are extinguished. Here is how and why. Since rays consist only in rectilinear pressure vibrations in small vortexes, which are all in equilibrium and which mutually resist each other by their centrifugal forces, they are not repelled when they fall on a solid particle of glass that has no centrifugal force. It is as if they were to fall on a soft particle. True, the particle is hard; but as it is so only through the compression from the centrifugal force of the small vortexes surrounding it and giving it, like all particles of which bodies are composed, its figure and consistency, the pressure of each vibration that falls on the particle and disturbs it somewhat is irregularly distributed on the vortexes compressing it. Now, this extinguishes the ray, for it consists only in rectilinear pressure vibrations, and this gradually excites only heat, for warm bodies are so only through the disturbance of the particles of which they are composed. Thus, we see that black bodies exposed to the sun are heated much more than white bodies, which reflect rays, and transparent bodies, which transmit almost all of them.

Various views with respect to the cause of refraction have been published, of which the most likely is that air being grosser than the subtle matter that fills the pores of transparent bodies, rays upon entering them must have been repelled by the gross air, which resisted them, and be refracted toward the perpendicular. But the preceding experiment and several others that have been performed do not agree with this view. And in fact, the rays that meet the gross parts of air and disturb them are extinguished, as I have just said; or they are not repelled by them, at least not in the way necessary to continue or transmit vibrations, nor with sufficient force to refract rays as much as they are at the surface of glass or diamond, whose refraction is about 5 to 2.[a] For even here below, where the air is compressed by the weight of the atmosphere, in a volume composed of air and subtle matter, gross air does not occupy the ten-thousandth part.

Since the reflection and refraction of rays is not produced by the action of air or glass in their passage from one to the other, it is therefore necessary that the cause be derived from the very action of subtle matter, because there is only the action of it, the air, and the glass.

To explain how this occurs, it must be noted that all the parts of ether, or all the small vortexes that I believe I have demonstrated it is composed of, are equally compressed and are in equilibrium among themselves, or continually tend to put themselves in equilibrium. For as every body actually moves in the direction in which it is less pressed, if some part of the ether were less pressed than the others, it is clear that the others would fall upon it and press it as much as they themselves are. Without this equilibrium and equality of pressure in which the small vortexes put themselves by their centrifugal forces, their various vibrations produced by the various motions of the particles of which the stars are composed, some of which appear with a light bordering on blue and others with a reddish light, could not be transmitted to us, nor could it be done instantaneously. Our perception of them could well be interrupted by interruption of the pressure vibrations causing it, and could be interrupted longer than it when some particle flying about in the air crosses the line of their rays to our eyes. For because of the distance of the stars, which is so great that they appear only as a luminous point even with telescopes, which so greatly enlarge the planets, the collection of all their rays has so little thickness that the smallest of the gross parts, still different from ether, interrupt their action and make them twinkle by constantly crossing their rays.

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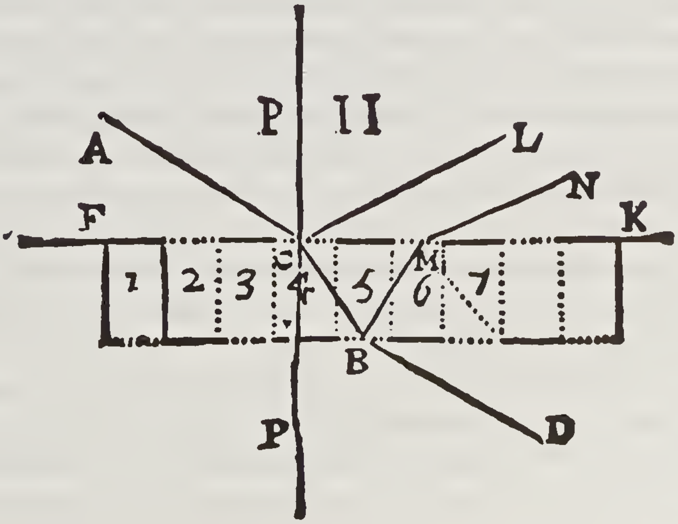
[a] According to Newton, page 232 of his *Opticks*.

Assuming, then, that all the small vortexes of ether are equally and almost infinitely compressed, and that they are all counterbalanced by their centrifugal forces, as soon as the particles of the luminous body press the small vortexes they meet, their pressure is communicated to all the others right up to us, and this happens instantaneously because there is no void. These particles of the luminous body, disturbing by their different motions the vortexes which offer them resistance, cause pressure vibrations in them. Now, all these pressure vibrations occur in a straight line so long as they are in the ether. For with all the vortexes counterbalanced by their centrifugal forces, the rays or pressure vibrations are pressed to the right as much as to the left. Thus the rays cannot change direction. But when they obliquely meet the surface of glass, they undergo refraction there and are diverted toward the perpendicular to that surface; and this refraction is greater as the bodies they enter are heavier or denser than those they are leaving. We have already seen the reason for this, but it must be explained more distinctly.

Let us assume that FK represents the surface of the glass, and that 1, 3, 5, 7 indicate the solid parts of this surface and that 2, 4, 6 indicate the pores filled with small vortexes of ether. Assuming the same thing for the lower surface of the glass, and that the ray or line of pressure vibrations AC falls obliquely on the glass, it is evident that it must be diverted toward the perpendicular. For since there are more vortexes in air than in glass, there are also more centrifugal forces; and since the ray is no longer equally pressed by the centrifugal forces of the surrounding vortexes, the direction of the pressure vibrations must be diverted in the weakest direction. Now, since there is the same ratio between the centrifugal force of the vortexes in the air above and below the glass to the force at the two surfaces of the glass, the ray is diverted as much from the perpendicular at the



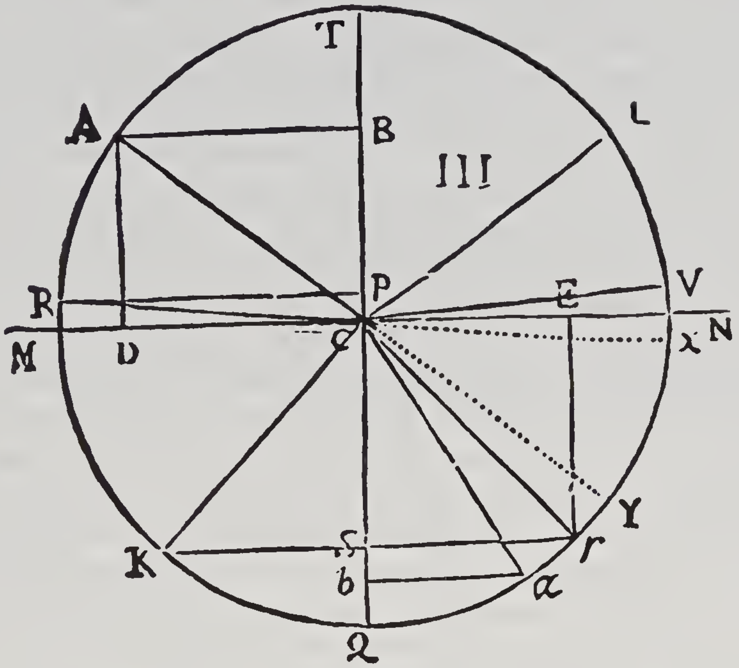
point of the surface from which it leaves the glass as it was in entering the glass. But if the lower surface of the glass were dipped in water, since there are fewer vortexes in water than in air and more than in glass (because water weighs more than air and less than glass), the ray upon going from the glass to the water must recede a bit more from the perpendicular to point B, but as less than if it were entering air as there are less vortexes and centrifugal force in water than in air. Finally, if we place a convex lens such as the objective lens of a telescope in contact with the lower surface of a flat piece of glass at a perceptible point, the rays passing through this point are neither refracted nor reflected, there being equal vortexes and centrifugal force in the two lenses. The objective lens will appear to have a hole at the point of contact. Finally, in the experiment I have already mentioned of a ray intercepted by a small hole in a card and falling upon a piece of glass producing two quite perceptible reflections, if we dip the lower surface of the glass in the water where the second reflection occurs, we shall so weaken it that we shall hardly see its weak light. Weak, I say, in relation to the light of the first reflection, and all the weaker as there are fewer vortexes in water than in air.

It evidently follows from all this that since the reflection and refraction of rays, or the deviation from the line of light pressures, is not produced by the gross parts of air in the ether, nor by those making up the lens, this deviation can result only from the centrifugal force of the vortexes of subtle matter by which they compress each other and all the bodies they surround in order to preserve equilibrium among contrary forces according to the natural law that all bodies move in the direction in which they are least pressed.

But in order that you might conceive the truth of my view still more distinctly, I am going to deduce from it that the ratio of the sines of the angles of incidence and reflection must be constant and always the same in whatever oblique way rays meet the surface of glass.

Let us first imagine that the circle RTVQ represents a glass ball; the ray RC will not be refracted at point C, nor anywhere else, if the glass is of equal density throughout. But if we suppose (a) that the upper hemisphere is cut off, (b) that above the line MN of the surface of the glass there are only vortexes with very little gross air, (c) that on the surface of the glass itself MN there also are only vortexes with very little air, but with many of the gross parts of which the glass is composed, and (d) that a ray of light obliquely intersects these two rows of matter with unequal vortexes, and hence with unequal force; it is evident that upon passing from the air to the glass the ray will be diverted toward the perpendicular to these two rows or surface of unequal force, and this will occur in direct proportion to the obliqueness of its intersection of the line MN, for if it fell perpendicularly, upon entering the glass it would be equally pressed or directed on both sides of the perpendicular.

To have another, more distinct idea of what I have just said, and shall say in what follows, let us imagine that the figure MTNQ represents one of these small vortexes that transmit the action of luminous bodies not by their motion but by their pressure, and that this small vortex is between the two rows of matter of unequal force just mentioned. If the incident ray or the line of its pressure is AC,



it is clear that the upper row, the one in which there are more vortexes and consequently more centrifugal force, will press the small vortex along the perpendicular TC more than the other row. Now, this perpendicular pressure along TC is not fully applied to the ray, or line of its pressures, along AC; rather, the full pressure along TC stands to the part of this same pressure applied to the ray AC as TC stands to the perpendicular drawn from point T to AC, which is equal to AB, both being equal to the sine of the angle of incidence ACT. The same is true with respect to every other ray. The sine RP, for example, of the angle of incidence RCT of the level ray RC will express the force of the pressure by which the row containing more vortexes compresses it. Thus, given that the sines of the angles of incidence of different rays express the different forces whose total force (which causes the deviation and which is but the excess of the centrifugal force of the vortexes in the air over those in the glass, a force that always remains the same and is expressed by the perpendicular CT), is applied to these rays and presses them, it follows that since the deviations of these rays must stand to each other as the forces causing them, the sines of the angles of refraction of the different rays must necessarily stand in the same ratio to the sines of their angles of incidence, i.e., RP:AB::*rs*:*ab*, and RP:*rs*::AB:*ab*. And as the sine RP of the level ray can be taken as the half-diameter, all the sines of the angles of incidence stand to the sines of the angles of refraction as the half-diameter stands to the sine of the angle of refraction of the level ray, i.e., as MC stands to CE, equal to *sr*.

We therefore see that the centrifugal force of the small vortexes and the equilibrium in which they constantly tend to place themselves easily provides the physical explanation of a truth that is the foundation of all optics, and of the remarkable construction of our eyes that I shall explain in the Elucidation which follows.

With respect to the reflection of rays, I believe I demonstrated that they are not made to reflect by the gross parts of bodies that we call transparent, and that are indeed much more transparent than all others, such as glass, water, and air. I say, *that we call transparent*, for all very thin bodies are transparent because they all have pores through which certain pressure vibrations of the small vortexes continue on, even gold, which is the densest and heaviest of all metals, for it reflects certain rays and allows others to pass. It reflects the rays whose pressure vibrations make us see a yellow color, and when it is reduced to very thin leaves, it allows those rays to pass whose vibrations make us see a blue color. But even if we saw no color through the gold leaves, we should not thereby conclude that no rays pass through them, but only that there are so few of them that they are insufficient to disturb the retina and the brain enough to occasion some sensation in the soul. For the matter revolving around a magnet passes through it as easily as it does the air, and even water when extremely compressed in a gold bottle passes through it like perspiration and forms in beads. It is therefore clear that the small vortexes, at least most of which are smaller than the particles of which gold is composed, since they give these particles their consistency with their centrifugal force, it is clear, I say, that these vortexes, or at least some of them, can continue their vibrations in a straight line, and that all bodies of very little thickness are transparent. Let this be said in passing. Now let us come to the reflection of rays without which we would see only luminous bodies.

It seems to me I have sufficiently proved that neither the gross parts of which glass and other bodies are composed nor the air surrounding them is the true cause of the reflection of rays, from which we must conclude that it is found in the centrifugal forces of the vortexes themselves.

As we already know why a very hard or perfectly elastic ball obliquely falling on a flat surface rebounds due to the resistance of the flat surface in such a way that the angle of reflection is equal to its angle of incidence, I feel that to explain the reflection of light it is enough to indicate the differences between these reflections, without repeating what we already know.

a) Vortexes are not in motion like the ball. For the reflection of a ray of light is only a new determination in the line of pressure of the small vortexes that remain in their place.

b) The reflection of rays does not occur at the point where the ray and the vortex touch the solid parts of the glass, which have no centrifugal force, but at the vortexes they press, which are diverted toward the perpendicular by the greater number of vortexes above the glass, as I have explained.

c) The reflection of rays, i.e., the pressure of vortexes does not reflect entirely; the greatest pressure occurs in the glass and traverses it. Since the reflected pressure results only from the reaction of the vortexes pressed by the action of those that are above the glass and that direct them toward the perpendicular, the reflected ray is much weaker than the refracted.

d) The elasticity that makes the ball rebound results only from the centrifugal force of the small vortexes in its pores. The elasticity that makes rays rebound is but the centrifugal force of the small vortexes themselves of which the ray is composed.

Finally, the angle of incidence of the ray is equal to that of reflection, the explanation of which is similar to that of the perfectly elastic ball. This is what I think about the reflection of rays, which seems to follow from the properties of light that I have tried to explain and prove.

I believe we now see the physical explanations, i.e., the explanations that depend on this incontestable principle, that everything tends toward equilibrium, or that every body moves as soon as it is unequally pressed. I believe, I say, that we see clearly:

a) Why rays that undergo refraction passing through different media follow the same path in both directions, and that if a luminous or an illuminated object is moved to its focus, i.e., to the point where its image appears, the same image will be seen at the point from which it was transported.

b) Why the sines of the angles of incidence of all rays, although variously inclined, all stand in the same ratio to the sines of their angles of refraction, and why the sines of incident rays are equal to those of reflected rays.

c) Why hard bodies in particular ordinarily undergo a refraction exactly proportional to their weight, refraction and weight coming from the same cause, that there are more vortexes and consequently more centrifugal force in air than in heavier and harder bodies. It is true that refraction is not so exactly proportional to weight in fluid bodies whose weight is practically the same. Water, for example, though somewhat heavier than spirits or wine does not undergo as much refraction according to experiments performed on them. One of the main reasons for this is clearly that although the particles of fluid bodies do not have as much centrifugal forces as the small vortexes, they do have some force since they, like fluids, have some motion. Thus they can offer more or less resistence to the surrounding vortexes as their motion changes. Now, as the difference in weight between water and spirits of wine, and consequently between the force of the vortexes surrounding these two liquids, is not very great, the difference between the different motion of the particles of wine and those of spirits of wine might be such as to upset the ratio of weight to refraction. Other causes of it might be conceived, but clearly I have mentioned the main one. For it must be noted that the same water does not always produce the same refraction; warm it produces less than when cold, because then it is not only less heavy than it was when cold, but also the parts of which it is composed are more in motion. But when of two object lenses of a telescope equally well ground in the same bowl the one is excellent and the other worthless, the only explanation is the unequal weight or density of the parts of the glass, which causes the inequality in the refraction.

Since it is certain that all the rays of different colors constantly cross without confusing and destroying each other, it is clear that their action does not consist in the direct motion of the small vortexes, but solely in the pressure they receive from luminous and lighted objects and immediately return to them by their centrifugal force. For a vortex cannot simultaneously move in all directions, but it can simultaneously press and be pressed in all directions.

Assuming, then, that the range of colors results only from the different frequency of pressure vibrations, as I believe I have sufficiently proved, we can clearly see the reason why all the simple rays—red, orange, yellow, green, blue, indigo or dark blue, and violet—do not change their color or the frequency of their vibrations, and that their refractions always stand in the same ratios to each other, as Newton has proved with several decisive experiments. For since there is no void, and since everything is a plenum and is almost infinitely compressed, a ray cannot press at one point without at the same time pressing everywhere along to the optic nerve, where it is extinguished or weakened after having disturbed it, and through it the brain in the way necessary to occasion in the soul a given sensation of color.

It is true that when a yellow ray presses some fiber of the retina in conjunction with a blue ray, it makes us see a green color. But this color, although similar insofar as it is a sensation similar to that produced by the simple green ray, has a very different cause. For if the simple green ray is passed through glass prisms, it will always remain green; but the other passing through it will become yellow and blue—since the yellow produces less refraction than the blue, these two rays will separate. The cause producing it should not be judged by the sensation. It is easy to understand how two or more unequal vibrations, falling together on the same fiber of the optic nerve can disturb the principal part of the brain in the same way as intermediate vibrations. There is no white ray, for example, which is simple. Every very white ray is composed of all the simple rays, red, yellow, blue, and so on, which all produce different refractions and vibrations; and all the different colors by which objects appear to be colored result only from the different mixtures of simple rays, either transmitted or reflected by the transparent particles of opaque objects.

It is very likely that upon leaving the sun, in which nothing is in equilibrium and where all the matter composing it drives by its various motion the spherical layer of small vortexes which is in equilibrium with the superior layers (as I mentioned while discussing the weight of the planets), it is very likely, I say, that upon leaving the sun the small vortexes, although caused by the irregular motion of the sun's parts, are constrained to arrange themselves to produce their vibrations at commensurable times, and that once this arrangement is produced or this kind of equilibrium acquired, each ray maintains the same frequency in its vibrations. From this it follows that a determinate number of simple rays that always maintain the same frequency in their vibrations always undergo the same amount of refraction, which fact is certain because of Newton's experiments. For just as there can be only a determinate number of sounds when an octave is divided harmonically, i.e., in such a way that the different tones it contains are commensurable or the vibrations in the air causing them agree and recur together as quickly as possible without being destroyed, so there can be only a determinate number of simple rays. In addition, in the experiment he performed—p. 104—to determine exactly the particular amount of refraction of each simple ray, Newton found that the band of simple colors was divided harmonically. He had separated these colors very precisely by means of various prisms, as can be seen in his excellent book. I therefore believe that we can with great probability conclude from this that the red ray, which has the greatest force since it undergoes less refraction than the other rays, is not driven so quickly, or repeats its vibrations less often than those following it, and that the violet, which is the last and weakest, is of all the one whose vibrations are smallest and most frequent, or repeat most often.

When we place a convex lens under a flat piece of glass, through reflection we see a small black circle at the point of contact between them and several concentric coronas of different colors that are very perceptible, especially when the lens is very slightly convex. But when we look through, we see white what we saw black, red what we saw blue, violet what we saw yellow. In a word, through reflection and refraction we ordinarily see the sharpest and most contrary colors. This clearly shows, it seems to me, that the frequency of vibrations does not change and the line of a ray's pressure has the same disturbance throughout, and that we see objects each of a given color only due to the fact that of the light that contains all the simple rays, only certain of them are reflected whose various mixtures produce all the various colors.

Furthermore, I feel I must warn that you should regard only as conjectures or as general views that are insufficiently proved what I have just said in these last articles in order to account for the principal experiments that Newton, that learned geometer so renowned in England and everywhere else, has performed with such precision that I cannot doubt of their truth. For my principal aim in this Elucidation has been to show that all of physics depends on the knowledge of subtle matter, that this matter is composed only of small vortexes that through the equilibrium of their centrifugal forces produce the consistency of all bodies, and through the disruption of their equilibirum, which they constantly tend to restore, all the changes that occur in the world. My prinicpal aim has been to prove that rest has no force, that everything occurs through motion, and that the source of motion is only in that invisible matter that some otherwise very learned people take for nothing, or regard only as an inefficacious and inert matter when it is in equilibrium and does not make itself perceptible.

Many other conclusions might be drawn from what I said before in order to explain weight. That a feather, for example, must fall perpendicularly to the surface of the earth, and must do so at the poles as well as at the equator. That in the temperate zones the parts of the earth's surface revolve with precisely the same speed as the ether at the surface, and everywhere else with a speed that cannot be perceptibly very different. That weight must be perceptibly equal at the equator and at the poles, and consequently that the earth must be round. That all the planets must be surrounded by large vortexes, and by the small ones of which I have just spoken, for without them there would be no weight or, consequently, any accumulation of gross matter different from the ether. That since ethereal matter is composed of small vortexes that are in equilibrium and that are of an extreme fluidity and smallness, they should not be felt to offer resistance to horizontal motion. That the speed of bodies' fall is not proportional to their weight, that without the air's resistance they would all fall equally fast, and that in an air vacuum a feather must fall as fast as lead. That the weight of hard bodies must be precisely equal to their mass, i.e., to the real and motionless matter they have, not counting their pores full of vortexes. But if I entered into detailed proofs of these conclusions, and of all those we might draw from the supposition I made in order to explain the transmission of light and colors and the generation of fire, *viz.*, that ethereal matter is composed only of small vortexes, infinitely compressed, that counterbalance each other by their centrifugal forces, if, I say, I detailed these consequences, it would soon lead me into a country where I fear to make too long a voyage and where I would be sure to go astray. It is enough for me to have proved my supposition through the astonishing rapidity of ethereal matter, and through the resistance it meets in the plenum that forces its parts moving in every direction to place themselves in vortexes, and to have confirmed my proofs by the most general effects of physics such as the transmission of light and colors, the production of fire and its effects, the weight of bodies, their hardness and fluidity, on which depend all natural effects, and whose causes physicists look for; but certainly they will never find them except in the ethereal matter for this evident reason, that it is the source of all motion, and nothing occurs except through motion.

It would be more appropriate or at least more useful for my readers to dwell upon the infinite wisdom of the Creator, who in the creation of the universe so distributed and directed motion to the different parts of matter that He formed from it a work all of whose parts mutually depend on each other, a work that is conserved and constantly renewed through the general and simplest imaginable law that every body is moved in the direction in which it is most pressed, and to the extent to which it is pressed, I say a law that, let it be noted, does not draw its efficacy from matter—a purely passive substance whose motor force is nothing in it or belonging to it, as I have proved in the fifteenth Elucidation and elsewhere—but a law that the Almighty created and observes exactly in the ordinary course of His general providence over the arrangement of bodies, not only to endow His conduct with the character of His attributes in which He finds His law and motives, as I have proved elsewhere, but also to give to men and even to animals certain rules in order to preserve and conduct themselves. For if God did not regularly follow the law He established after having foreseen all its consequences and after having determined all the first motions according to it with an infinite goodness and wisdom, if He acted like particular causes and limited intelligences, there would be nothing certain in physics, and no principle of experience; in a word, everything with respect to us would fall into a chaos where nothing could be understood. But through the exact observance of this law, God produces light as I have just explained, by which He joins us not only to each other, but also to vast spaces. For extinguish light, or let the small vortexes surrounding us cease carrying the weight of the others and to be in equilibrium with those in the heavens and thereby cease receiving pressure vibrations according to the law, and there will no longer be any society among men;

there will no longer be that variety of colors that makes us discern objects. The earth will no longer be cultivated, and though cultivated will produce nothing for lack of the heat that results from light or the vibrations of its rays. Now, He who said, ''Let there be light,'' is the same one who formed the eyes of men and animals. For all the parts of which the eye is composed are so exactly related and so wisely suited to the action of light, as will be seen shortly, that light and eyes are clearly made for each other and proceed from the same hand, that of the Almighty, whose wisdom and goodness has no limits. If you likewise reflect on the utilities of the sun, of fire, of the weight of bodies, their different hardnesses and fluidities, qualities necessary to the formation and generation of all things, and if you reflect that all this depends on the motor force by which God, as it were, animates matter in relation to an infinity of purposes He carries out by a single law, you will easily understand that the wisdom of the Creator has no limits. But in the following Elucidation, I shall see out in more detail the marvel of Providence in the construction of the eye and in the use of the parts of which it is composed.

If what I have just said in this addendum on the basis of the general principle of physics is exactly true, and is founded on a certain principle, a matter I leave for discussion by attentive and enlightened readers, there will yet be some passages to be corrected in the summary of Descartes's physics I gave in chapter four of the second part of book six. But since my principal aim in this fourth chapter was to illustrate the difference between his way of philosophizing and that of Aristotle, I did not feel I had to completely reform his system on the basis of the one I just proposed, which does not entirely conform to his, although it basically depends on it. It is up to the readers to produce this reform, if they have the leisure to do so, and if the matter appears agreeable to them and to merit their attention, and if they judge what I have just written to be sufficiently demonstrated.

ELUCIDATION ON OPTICS

Last Elucidation

Containing the description of the parts of which the eye is composed and the principal explanations of their construction as an aid to understanding what is said in the first book concerning the errors of vision.

I had assumed in the first book that the reader would have at least a passing knowledge of optics, or that he would wish to instruct himself in it by consulting some book on the matter, such as the *Dioptrics* of Descartes that I had indicated to him; for if authors were to pause to explain even the most general principles of the sciences related to the subject they treat, and to assume nothing is known to the readers, besides boring and offending even the learned they would be able to treat nothing in depth without producing enormous works. Thus, I felt relieved of repeating what so many others have said and what can be seen elsewhere concerning the construction and use of the parts of which the eye is composed. Nevertheless, in order to satisfy those who know nothing of optics, without boring those who are trained in it, I thought I should add what follows to the end of this volume. For those who do not know optics will not have the bother of changing books in order to understand what I say about the errors and natural judgments of vision, a mild bother but one the negligent reader does not voluntarily undertake, and the others will not read what manifestly can teach them nothing. Moreover, I feel I must warn that it is enough to fully know how we see objects to be in a position to discover an infinity of truths, not only in physics, but also in metaphysics concerning the nature of ideas, and the goodness, the generality, the incomprehensible wisdom of divine Providence.

All the details of the eye's construction must be carefully[a] noted in order to understand the explanations of it that will be seen in what follows.

Three coverings that envelop the eye.

1. If an eye is cut in half flat across the middle of the pupil and the optic nerve, without the humors flowing out, it would appear as presented in this figure. ABCZ is a thick, hard covering that surrounds the whole eye. Its part

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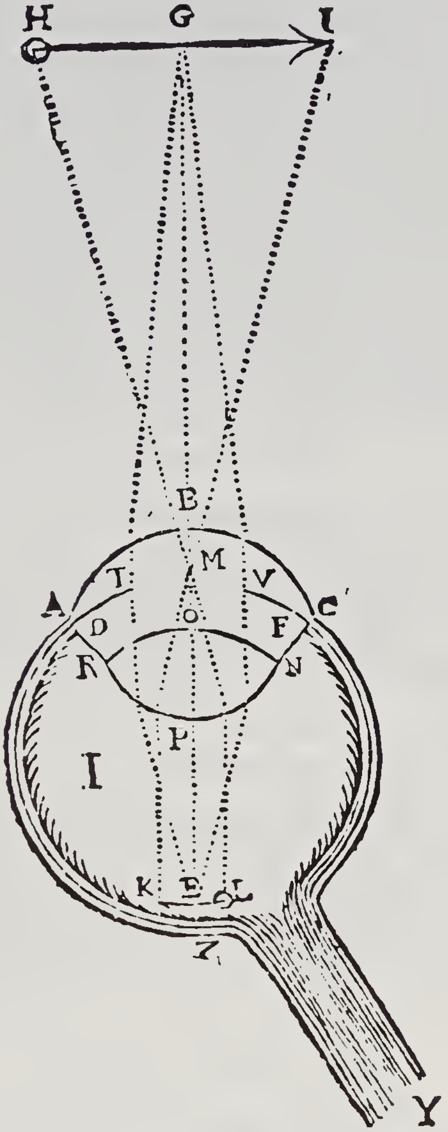
[a] See the first figure <p. 721>.

Construction of the Eye



ABC is called the *cornea* because it is hard and transparent like horn; this part is much more convex than the other. The second covering, which ends at the opening of the pupil TV, is finer; it is called the *uvea* or the *choroid*. It lines, as it were, the inside of the first covering and is securely attached to it at A and C by a membranous ligament called *ciliary*. The part of this covering that extends from D to T and F to V, and whose convex surface seen though the cornea is black in some, blue in others, or strewn with different colors, is called the *iris*. But the concave surface of the iris and the entire choroid is completely black in man, although not in some animals. The third covering, called the *retina*, lines the entire fundus of the eye and follows the choroid only from D to F.

Their origin.

2. The first covering of the eye originates at the first covering of the optic nerve LY, which originates at the first covering of the brain, called the *dura*

mater. The second covering, or the *choroid*, originates at the second covering of the optic nerve, which originates at the second covering of the brain, called the *pia mater*. And the *retina*, finally, originates at the medula of the optic nerve. For it is only the fibrillation of the small threads of which the medula of this nerve is composed, which joined with some veins and some very fine arteries, make the very delicate tissue called the retina. Now, these small threads contained under the coverings of the optic nerve originate at the part of the brain called the *medula oblongata*, and apparently are only the continuation of the threads or small canals of which this medula is composed, and by which the animal spirits are distributed. It should be noted that the retina is of a white color, and that the optic nerve is extremely thick in relation to the motor nerves of the eye, and as a result contains a great number of threads.

Ciliary ligaments.

3. At the spot marked AD, there originates from the *ciliary* ligament, of which I have just spoken, a quantity of very black small threads that extend to the crystalline lens RN and keep it in the position required to see objects distinctly, i.e., so that the line BP passing through the middle of the opening of the pupil is perpendicular to the three convexities ABC, RON, RPN, and for other reasons of which I shall speak.

The pupil.

4. It should be noted that the opening of the pupil does not have a determinate size. It diminishes when objects that are too bright might harm the retina, or when we fixedly look at a nearby object. Consequently, the iris produces the effect of a remarkable small muscle in that by its movement it always preserves the roundness of man's pupil. Let us now come to the transparent humors of the eye.

Three humors in the eye.

5. There are three very clear or transparent humors in the eye: the aqueous, the crystalline, and the vitreous. The *aqueous* fills the area ABCNOR. It is fluid like water and consequently produces the same refraction. The *crystalline*, which is surrounded by a very fine covering, fills the area RONP. It is slightly viscous and tough, roughly like the white of a hardboiled egg, but transparent like crystal. The *vitreous* occupies the rest of the eye, and its consistency is like that of uncooked egg white. As *refraction*[a] ordinarily increases with the density of the transparent bodies through which the rays of light pass, the refraction the aqueous humor causes in the rays is slightest, that of the crystalline is greatest, and that of the vitreous is smaller than the latter and greater than the former.

If you now understand what the plane figure represents, excluding the optic nerve and the opening through which it enters the eye and makes a half-turn on the axis BE, you will have a clear and complete idea of the globe of the eye and everything it contains necessary to my purpose. But to fix the idea of it, it would be good to dissect the eye of some larger animal.

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[a] Number 13 below.

Six eye muscles; four straight ones.

6. As regards the outside of the eye, there are strictly only the muscles that move and compress it, about which I must here say something. There are only six of them in man, four called *straight*, and two *oblique*, which all attach at one end to the bones of the fundus of the eye, and partly to the exterior covering of the optic nerve, and at the other to the globe of the eye. The four *straight* ones, making a large and tendinous stem, are attached straightaway to the exterior covering of the globe of the eye, and there form another covering. They certainly serve to draw the eye, one above, the other below, the third toward one corner of the eye, and the last toward the other. I believe they might also serve other purposes of which I shall speak.

Two oblique ones.

7. Of the two oblique muscles, the superior, which is longer and more narrow, originates near the muscle that draws the eye above and first goes toward the inner corner of the eye, where it enters a cartilage attached to the jawbone by a membranous ligament, which cartilage serves it as a leading block. From there it returns toward the upper part of the eye, and passing under the same muscle that draws the eye above, it finally attaches itself near the part of the eye where the muscle that draws it toward the outer corner is attached. The inferior oblique muscle opposite the other one is attached to the bone toward the inner corner of the eye; from there it passes below the eye toward the outer corner, and rising somewhat, it finally attaches itself to the globe of the eye, near the place where the superior oblique muscle is attached. When both act simultaneously with the four others, and especially with the one attached nearest to the place in the eye where they are attached, they compress the globe of the eye and thereby remove the crystalline lens from the retina as far as is necessary in order to see distinctly something up close. For it is a geometrically demonstrated truth that we cannot distinctly see something up close and at a distance without some change occurring in the eyes, as I shall show. It should be noted that these six muscles each have a small nerve to move them, for any muscle without a nerve to distribute animal spirits to it is inactive.

The construction of the eye is, I believe, sufficiently explained, but the properties of the parts composing it and the properties of light are not; nevertheless, some knowledge of them must be had in order to know how we see objects, and to have some slight idea of the infinite wisdom of the Creator in the formation of our eyes.

The nature and properties of light. How the action of luminous bodies is transmitted and produces in us the sensation of light and whiteness.

8. When we light a torch in the darkness, we see its light instantaneously in all

the places from which we look at it. From this it must be concluded that the flame of this torch acts both on our eyes and all the spaces it illuminates. Now, it is evident that it does not act immediately in all these spaces. For since the flame is composed only of particles of wax set in motion, and since it dissipates and expels at each instant only an infinitely small part of it, it is clear that this small part cannot fill the whole illuminated space. It must be understood, then, that the particles of wax, being aflame and consequently very agitated, press in every direction the subtle air or ether immediately surrounding them, and this air other air, and so on till it reaches us; and this occurs instantaneously because everything is a plenum and there can be no vacuum naturally. Now, this pressure that the flame causes in the subtle matter, or rather the combination of an almost infinite number of disturbances or pressure vibrations caused in the air by the almost infinite number of different parts of the flame, transmitted along to our eyes and through them to our brain, excites in us the sensation of light and whiteness as a result of the laws concerning the union of body and soul. For if in a dark place you press and disturb your eye in the place where the retina lines it on the inside, you will not fail to see light in the direction opposite the spot pressed, which sufficiently proves that some new pressure, greater than the one compressing the retina at night or when the eyes are closed, excites the sensation of light.

And that of colors.

9. I believe that the different pressure vibrations cause the diversity of colors, and I have tried to prove so in this work;[a] and I say here that the combination of vibrations that cause all the colors, such as it is found in the sun, excites the sensation of whiteness.

For if after having got[b] a multicolored image of the sun by means of a glass prism we interpose a magnifying lens large enough to take it in, with all the colors mixing at the focus of the lens, the image produced on a sheet of paper will appear entirely white, however colored it was.

Light reflected by objects.

10. We see not only luminous bodies from every direction and in a straight line, we likewise see all opaque bodies when they are illuminated. From which it follows that the pressure of light on objects that do not dissipate it—which is what black objects do—returns to the subtle air surrounding them and repels it in every direction because everything is a plenum and filled with a fluid all of whose parts are in motion. But this belongs to physics,[c] which it is not the time to discuss. I call, then, a ray of light, or simply a ray, the straight line drawn from the luminous or illuminated object by which the action making it visible is transmitted. Now, since we see objects from every direction, it follows that each part of objects reflects rays circularly in every direction.

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[a] See the Elucidation on light and colors.

[b] See the ninth and tenth experiments of Newton's *Opticks*, pp. 112, 117.

[c] See the preceding Elucidation.

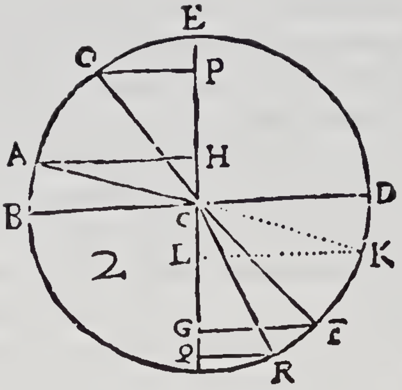
11. In order now to have some idea of the deterioration of light, or of the diminution of its force or pressure on the retina, it must be observed that the light objects receive from each point of a luminous body decreases in ratio to the squares of the distances of these objects from each point. The light received by a coin, for example, when it is a foot from a candle stands to that it receives at a distance of 20 feet as one stands to 400, the square of 20. For a coin placed a foot from a luminous point makes a shadow 400 times larger than the coin on a wall placed at 20 feet from it. Thus the light of this coin at 20 feet is but the 1/400 part of the first light, i.e., of the light intercepted by the coin one foot from the luminous point. Now, the coin 20 feet from a candle can still be seen from all directions, which is possible only through the action or pressure reflected by the four-hundredth part of the initial light it received when it was only a foot from the candle. On the assumption, therefore, that against a black background it can still be seen at a distance of 20 feet, should the opening of the pupil become as large as the coin, and should the subsequent light not spread in all directions, but only through the space roughly determined by the size of a coin placed a foot away from the black background, only the 1/160,000 part of the initial light would enter the eye. Now, if the diameter of the coin is ten times greater than that of the opening of the pupil, only the hundredth part of the 1/160,000 part will enter the eye, i.e., the 1/16,000,000 part of the light falling on a coin a foot away from the candle. Finally, only the two-hundredth part of the sixteen-millionth, if we exclude from it the light reflected from the coin that spreads in all the other directions, assuming that it can be seen at a distance of twenty feet. For half a spherical surface is equal to two circles intersecting the sphere through its center. Thus, by assuming the ray of the sphere to be a foot and that of the coin's circumference the tenth part of a foot, half the spherical surface would contain two hundred times that of the coin, because the circles stand to each other as do the squares of their rays. Yet this weak light is capable of disturbing the very delicate fibers of the retina, assuming that the coin can be seen from every direction at a distance of twenty feet by the light it reflects.

The delicacy of the fibers of the retina.

12. In order also to discover what the approximate delicacy of the retina's fibers might be, we have only to place against a black background exposed to the sun a piece of paper one ligne square, note the distance from which we can see it, and then draw this proportion. As the distance from which we see it stands to the diameter of one eye, which is about six lignes, so one ligne stands to the side of the paper's image in the fundus of the eye. And squaring this fourth term to obtain the square of the image, we shall have its area, which we shall find to be several hundred million times smaller than a square ligne. By the paper's image, I mean the precise place where the rays it reflects meet, for it can happen that the fibers of the retina on which the rays meet somewhat disturb their neighboring fibers. Let us now come to refractions of light.

Refraction of light.

13. When a ray passes from a rare medium such as air to one less rare or more



dense such as glass or water, it is diverted or undergoes refraction upon entering it; but having entered it, the ray travels in a straight line until leaving it. If, for example, there were air above the line BCD[a] and glass below it, and if a ray traveled from A to C (when I say *traveled*, let it be understood that I mean tended to travel or pressed from A toward C), it would not travel toward K, but would be diverted toward F upon entering the glass from the air. The reason for this is that all moving bodies, or all bodies tending to move, always travel in a straight line when they find equal resistance in all directions, and that they are always diverted in the direction in which they find the least resistance. Now, the ray finds less resistance in glass and denser bodies than in air and water; the explanation I give of this can be seen in number 19 of the preceding Elucidation. When I say in glass, I mean in the pores of glass through which the ray can pass or transmit its action, and not in the solid part of the glass where disturbing them somewhat it is extinguished, as I have explained elsewhere.

Thus, since the ray AC finds less resistance to the transmission of its action in glass than in water, and less in the pores of water than in air, it must be refracted toward the line CG, perpendicular to BD, and must make the angle GCF smaller than the angle LCK.

The measure of refraction.

14. The lines KL and FG, drawn from the points K and F perpendicularly on PQ, which perpendicularly intersects the line BD separating the different media, these lines, I say, KL and FG, are called the sines of the two angles LCK and CGF. Now, as the angle LCK is equal to the angle HCA, which is called the angle of incidence, its sine AH is equal to the sine LK. The refractions undergone by rays passing from one medium to another are therefore expressed by the ratio between the line AH and FG, which are the sines of the angles of incidence and refraction. Since the refraction undergone by a ray, for example, passing from air to glass is three to two, the ray AC will pass through the point F if the sine GF is two-thirds the sine AH; and for the same reason, if the ray FC passes from glass to air at C, it will be diverted toward A.

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[a] See figure 2 [immediately above].

Fundamental principle of dioptrics.

15. The main law on which dioptrics is based is that the sines of all angles of incidence, whatever the obliqueness they might have, individually have the same ratio to their sine of refraction. If, for example, a ray leaves whatever point you wish, above or below the point A, and passes through the point C, such as the ray OC for example, it will pass through the point R. And the sine OP of the angle of incidence will stand to the sine QR of the angle of refraction in the ratio of 3 to 2, as does AH to GF. The same is true of every other ray meeting the surface at point C.

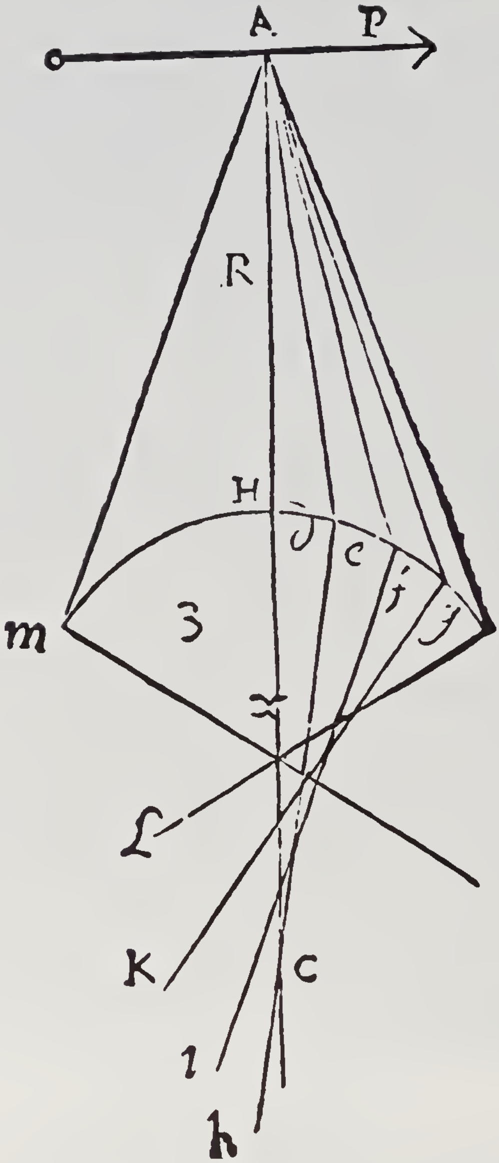
Thus, when we know through exact experiment the amount of refraction of any ray passing from one medium to another, we can geometrically determine the angles that all the other rays must make with the line that perpendicularly intersects the surface separating the two media. But for my purposes, it is enough to know in general that since the humors of the eye are denser than air, rays undergo in the eye a refraction that gathers them on the axis, and that the refraction of a ray passing from air to the aqueous humor is roughly 4 to 3, to the crystalline 3 to 2, and to the vitreous humor, 10 to 7, or thereabouts.

Difference in the refractions of rays falling on a convex lens.

16. When several rays leave a luminous or illuminated point and pass from air into a dense body, a lens for example, whose surface is convex, the ray falling perpendicularly on this surface, being equally pressed on all sides by the air surrounding it as it enters the glass, undergoes no refraction; but all the others do undergo refraction and all the more so as they enter the glass at a point farther from the point A on the axis AH, because the more obliquely they fall on the surface or the tangent that would pass through the point they enter the glass, the more they are diverted, since the sines of the angles of incidence made by all these rays with the perpendiculars to the surface always stand in the same ratio to the corresponding sines of their angles of refraction.

Focus of these lenses.

17. For example, if the ray AH falls perpendicularly on a magnifying glass or convex lens, it will continue its path in a straight line and pass through the center of its convexity. If the ray closest to AH intersects it at *d*, the ray will be diverted and will intersect the axis at C, and this point C will be what is called the point of convergence of the rays close to the axis and the location of the image of the object AP. The other rays A*e*, A*f*, A*g* will become *ei*, *fk*, *gl*, in such a way that those entering the lens at the points farthest from point H will be the closest to it when they intersect the axis. The line passing through point *d*, for example, which is the closest to H, intersects the axis HC at point C, and this point is farther from H than point *x* or point *g* of the lines that on entering the lens are farthest from H. Now, these rays that do not enter the lens very close to H confuse the image of objects depicted at the focus of the lens, and the more so as they are farther from point H, although they make this image brighter and more vivid. For if from the point P near A on the object AP a perpendicular were



drawn to the lens between A and *d*, and from the same point P rays similar to those drawn from point A, the ray closest to this new perpendicular would, after refraction, intersect it near the point C on the other side of the axis AHC; and the point where this ray would cut the new perpendicular would be the point of convergence corresponding to point P. Now, the rays drawn from point A, somewhat farther from the axis than the ray A*d*, which intersects it at point C, would also pass through this same point of convergence that corresponds to point P, and which is near point C. Thus, several rays drawn from point A would mix with those from point P and would disrupt their action. What I have just said of the rays drawn from points A and P must be understood for all the other points of the object whose rays being farther from their perpendiculars indeed make the image brighter, but all the more confused as more of them enter the lens. On the other hand, if we cover the lens and leave only a very small round opening in it in order to exclude rays farther from the axis from entering, the small cones of light that will pass through it, or the combination of all the rays impelled by each point of the object, will not have enough intensity and brilliance to make the image they form at the focus of the lens sufficiently perceptible. Consequently, in order for the image of objects to appear as distinct as possible at the focus of the lens and to be illuminated sufficiently to be perceptible, the opening of the lens must stand in a determinate ratio to the amount of light illuminating the objects from which the rays leave, and all this in relation to the delicacy of each person's vision. For he whose vision is most delicate does not need so much light, and the image will appear to him more distinct if the opening of the lens is smaller.

Experimental proof that the rays farther from the axis confuse images.

18. I do not undertake to demonstrate geometrically the details of all this for fear of fatiguing those who do not like geometry, and because of the distaste I myself find in measuring lines forming triangles. Besides which, those who are geometers know what I could say following several others, or can educate themselves in it in books dealing with dioptrics. But those who wish to assure themselves through experience and in concrete fashion of what I have just said, that the rays farther from the axis HC[a] such as A*g* and A*m*, after their refraction intersect the axis at A closer to H than the others, have only to completely cover a rather large lens with paper in which they have made with a pin four holes arranged in a straight line, two of which are some equal distance from the axis and correspond to the edges of the lens, and the two others rather near the axis. For having exposed this lens to the sun in order to receive its light on a piece of paper behind it, they will see that by gradually withdrawing the piece of paper from the lens, the farther rays will approach each other more quickly and will cross sooner than the others, and nearer point H.

Another experiment to prove the relation between the opening of lenses and the amount of light.

19. To further assure yourself through experiment that in order for the images convex lenses depict at their focus to be distinct and rather vivid there must be a determinate relation between the opening of the lens and the amount of light by which the objects represented by the image are illuminated, you have only to take what is called an artificial eye, i.e., a tube, blackened on the inside, about three or four inches long, and at least one inch in diameter; place a lens at one end, and at the other, the focus of the lens, a very thin piece of paper, or a flat piece of glass worn by sand and made white and mat. For by giving very different openings to the lens, which, so that the experiment might be more striking, is turned toward objects illuminated by the sun, you will see that an opening that is too large makes the image represented on the paper more brilliant but less distinct; and as conditions grow dark, the opening must be increased.

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[a] Figure 3 <p. 728>.

The images recede from the lens when the objects approach it.

20. If the object AP,[a] whose image is at C where the rays near the axis intersect it after their refraction, were withdrawn from the lens, the image of this object could gradually advance somewhat toward H. And if the object approached the lens, its image would continuously recede a great deal from H. There is quite a difference in the movement of the image, or in the point of the rays' convergence, when the object approaches the lens and when it withdraws from it. For by supposing that the object approaches and withdraws from the lens with an equal and uniform motion, the movement of its image toward point H will continuously diminish when the object withdraws from it, and will never even pass point X, if this point is the focus of the lens, i.e., the point where all the rays parallel to the axis converge. But on the contrary, when the object approaches the lens, the movement of its image will, in order to withdraw from it, continuously grow larger *ad infinitum*. Consequently, having approached as near as the point called the negative focus of the lens, i.e., the focus taken from the other side of the lens, the point of convergence of the nearer rays, such as A*d*, will have passed through an infinite space, and these rays, after their refraction, will be parallel to the axis HC. It follows from this that the location of the image of objects 100 fathoms away is not perceptibly different from the location of the image of objects 1,000 fathoms away, or the latter from the location of the images of the sun and the stars. And it likewise follows from this that the location of the image of an object two feet from the lens is quite different from that only a half-foot from it, and that if the lens had a focus of a half-foot, the image, after having passed through an infinite space, would be dissipated.

How the various distances of images are determined when the distances of objects are given.

21. But if you wish to know in particular how far the image of an object that is but a half-foot from a lens is from that lens, and then how much this image approaches the same lens when you move the object two feet from it (in order to judge by this means how much the retina must approach the crystalline lens in order to distinctly see objects a half-foot and two feet away), you must know the following proposition demonstrated in dioptrics.[b] To determine the point of the image that corresponds to the point of the object, the following proportion must be constructed on the line joining these two points. As the distance of the object from the lens, less the half-diameter of the convexity of the lens, stands to the full distance of the object, so the half-diameter of the convexity of the lens stands to the unknown distance of the image. Thus, on the assumption that the humors of the eye produce the same refraction as a small lens equally convex on both sides, the half-diameter of whose convexity is six lignes and where we ignore the thickness of the lens, we can say that as 72 lignes less 6, or 66 lignes (which is equivalent to a distance of a half-foot from the object, less the half-diameter of

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[a] See figure 3 <p. 728>.

[b] The demonstration of it will be found at the end of this volume.

the convexity of the lens, which is 6 lignes) stands to 72 lignes (the full distance from the object) so 6 lignes stands to the distance of the image, which consequently is (72 × 6)/66 or 72/11; you can then construct this proportion. As 288 lignes less 6, or 282 (which is equivalent to 2 feet, the second distance from the object, less the half-diameter) stands to 288 (the full distance) so 6 lignes stands to the unknown distance, which consequently is (288 × 6)/282 or 288/47, and subtracting 288/47 lignes from 72/11, you will find that the image of an object that is two feet away is closer to the lens by about 3/7 lignes, and that according to our assumption, therefore, which is hardly exact, the retina would have to be 3/7 lignes closer to the crystalline lens in order to distinctly see an object two feet away than to see an object a half-foot away. And by the same operation you will find that to see it from three inches away, the retina would have to be about a ligne-and-a-quarter closer to the crystalline lens.

But if you wish to assure yourself in a concrete way that the image of objects recedes from the lens when the objects approach it, and that it approaches the lens when they recede from it, you can use the artificial eye, whose tube I assume can, by being lengthened or shortened, approach or recede from the objective lens, the mat glass, where the images of external objects are depicted; and the change of location of these images will be all the more perceptible as the lens is less convex. But it is enough that the lens should have a focus of three or four inches in order to be assured through concrete experiments of what I have just said. With these truths of dioptrics assumed, let us examine how we see objects and the reasons for the admirable construction of the organ of sight.

The retina is the principal part of the eye, for through it light transmits its action to the brain. Objects must be depicted on the retina; two objections.

22. It is clear from the construction of the eye and from the properties of light that we see objects distinctly only when their images are distinct, i.e., only when the various rays leaving each point of the object are exactly converged in the fundus of the eye. But since the fundus of the eye is covered by the choroid as well as by the retina, there are some people who believe that rays must converge on the choroid rather than the retina, and that on it or through it vision occurs. They adduce two main proofs for their view.

The first proof is based on this experiment. If on a black or dark background we attach two pieces of white paper at the same height, two or three feet from each other, and if we back up from them about three times the distance between these two pieces of paper and close one eye, the left, for example, and if we fixedly look at the paper to the left with the right eye, the paper to the right will then disappear. Now, the reason why the paper to the right disappears, and would appear if remaining in the same place we placed it elsewhere, is that its image falls precisely on the choroid's opening through which the optic nerve winds its way into the eye in order to form the retina. Therefore, they say, since the rays forming the image that disappears do not meet the choroid and do meet the retina, the choroid is used in vision and not the retina.

The second proof is that black bodies receive rays and white ones reflect them. Now, the choroid is black, and the retina is white; therefore. . . .

Reply to the first objection.

23. I reply to the first proof that the experiment is accurate, and that the image of the paper that disappears falls precisely on the opening where the choroid allows the optic nerve to enter. For certainly the anatomists who place the opening of the optic nerve directly opposite the opening of the pupil are mistaken; the opening is somewhat closer to the inner corner of the eye. But as the filaments of the optic nerve here spread out in all directions to cover the choroid, they are arranged like a small curved funnel, with the result that since the rays of the image fall obliquely on these filaments, they cannot communicate the necessary vibrations or disturbances to excite the sensation of it. For in order to see an object distinctly, the principal rays of each point of the object must fall perpendicularly on the retina in order to firmly communicate their pressure vibrations to it and to the spirits contained in the small filaments or canals of which it is composed so that their motion can be communicated to the principal part of the brain. Without this latter communication no sensation would occur in the soul, because it is not the eye but the soul that sees, since one becomes blind when some humor blocks the optic nerve, although there might not be any damage in the eye, as happens in amaurosis.

I have assumed that the small filaments of the retina are hollow, filled with animal spirits, and continuous from the fundus of the eye to the principal part of the brain, i.e., the part whose various changes are followed by the soul's various sensations. I have made this assumption, I say, because it seemed most suitable to me for explaining how the vibrations of light on the filaments of the retina are communicated to the brain. For it is certain that if one end of a tube exactly filled with water were pressed several times with the finger, the same thing would happen at the other end and the finger would be pushed back. But if you pressed your finger against a soft, elongated body such as a gut, the finger would not be pushed back after it had made its depression, and the motion of the finger would not be communicated from one end to the other.

Reply to the second objection.

24. I reply to the second objection, first that it is precisely because the choroid is black and deadens light vibrations that it cannot transmit them to the brain, and on the contrary that since the retina is white and reflects the rays pressed against it, the same vibration occurs in the spirits contained in its filaments as that which occurs in the rays of light, as in the example I have just related about the gut filled with water.

I reply, secondly, that since the choroid originates only at the pia mater, which does not enter the brain as do the filaments of the optic nerve, there is no likelihood that it can transmit vibrations of rays to the principal part of the brain, even if it should not deaden them. It is therefore certain that it is the retina that transmits to the brain the action of the rays of light reflected by objects and that the choroid is black only in order to receive and deaden certain useless rays, which having entered the retina would disturb its vibrations should they be reflected and fall upon it. For it is clear that the bottom of the iris and the ciliary ligaments are black only in order to deaden the rays that reflect from the retina, and that would disturb vision if they should fall upon it confusedly.

With this truth assumed, let us try to discover in part the infinite wisdom of the Creator in the means He has employed in executing the end He proposed for Himself in giving eyes to man, and by continuously acting on him in a constant and uniform way, i.e., according to the general laws that are the order of nature.

The wisdom of God in the construction of the eyes. God alone can give us perceptions of objects.

25. It is certain that the soul does not cause in itself all the perceptions it has of the objects surrounding it as soon as it opens its eyes and looks around in the middle of the countryside. For besides the fact that it sees them without willing to do so, it has not the least knowledge of the construction of its eyes and brain, or of anything happening in them. It is further certain that neither the bodies surrounding us nor even the brain acts on our soul. For besides the fact that matter, itself a purely passive substance, cannot act on the mind, and that there is no necessary relation between certain disturbances of the brain's fibers produced by the light reflected by objects and the perceptions we have of them, the same disturbances are followed by different perceptions, and different disturbances are accompanied by the same perceptions, as we shall see in what follows. And all this is governed by inferences that depend on so great a knowledge of optics and everything happening in the body that there is no intelligence that can make them at the very instant that we open our eyes and look around. Consequently, whatever power, and I do not say the brain, but even an intelligence might have over the soul to modify it, it would not be able to give it all the perceptions it has the instant its eyes are opened in the middle of the countryside. In a word, I assume that it is God who gives us our sensations. But as God must always act in God, and as His attributes demand that He ordinarily act in a uniform way and according to general laws, without which there would be no regulated order in nature or certainty in physics, He has established the general law concerning the union of soul and body. That law, or general and efficacious will of the Creator is, in general, that changes occurring in a certain part of the brain are accompanied by sensations of the soul, and that certain desires of the soul are followed by the flow of spirits that move certain parts of its body.

The general rule God follows in this.

26. But to speak only about what concerns vision, God through this general law gives us precisely all those perceptions we would give ourselves *a*) if we had an exact knowledge, not only of what takes place in our brain and in our eyes, but also of the situation and movement of our bodies, *b*) if in addition we knew optics and geometry perfectly, and *c*) if we could, on the basis of this actual knowledge and not of other knowledge we might have drawn from elsewhere, instanta-

neously produce an infinity of precise inferences, and at the same time act in ourselves according to these precise inferences and give ourselves all the different perceptions, whether confused or distinct, that we have of objects we see at a glance—perceptions of their size, figure, distance, motion or rest, and all their various colors.

Our particular knowledge has no relation to His rule and in no way changes it.

27. It should be noted that in the preceding assumption I excluded *the knowledge we might have drawn from elsewhere of what actually takes place in our eyes* because such knowledge really has no influence at all on our sensations if it does not change anything in our brain. For example, although I certainly know that the sun is several million times greater than the moon, I yet see it as roughly the same size because its image on the retina is equal to that of the moon and because, in addition, nothing takes place in my eyes that might allow me to discover the difference in their distances. But though the image on my retina of a child I see at ten feet from me is equal to the image I have of a giant thrity feet away, I yet see the giant three times larger than the child, because there occurs in my eye something that I can use to discover the difference in their distance, such as the image of intervening bodies between me and these two people, or the different disposition of my eyes when I fix them on each of them to see them distinctly, or one of the other means that can serve to disclose the distance of objects, of which I have spoken in the ninth chapter of the first book. Thus, knowing the distance between the child and the giant, and having besides this, according to the assumption, a perfect knowledge of optics, which teaches me that the images of objects on the retina must diminish with their distance, I give myself a perception of the giant three times the height of the child's. The reason for all this is that since the eyes were made for seeing, there must be found in the changes happening to them, and through them to the principal part of the brain, and nowhere else, the occasional cause that determines the efficacy of the general will of the Creator to act in our souls and make us see the objects surrounding us. Let us now examine how God has disposed the eye in order to advise the soul, which would have to be capable of everything I have just said in order for it to assure itself of the presence and various qualities of objects in relation to the needs of the body and the preservation of life.

The reason why the eye is filled with humors.

28. If you replaced the lens of the artificial eye by an opaque body with a small hole in it, and if you turned it toward objects illuminated by the sun, you would see them depicted on the mat glass whether we approached or backed up from the small opening. But if you directed this eye toward poorly lighted objects, you would not see them at all. Thus, assuming that objects were always equally and very brightly illuminated, as brilliantly, whatever their color, as white objects exposed to the sun appear, all the variation in the humors filling the globe of the eye would be useless if the opening of the pupil were no larger than the point of a

needle; and we would even have this advantage, that we would be able to see objects much closer. But since it is necessary for us to be able to see objects ten thousand times less illuminated that those we could see if the opening of the pupil were so small, God has filled the globe of the eye with various humors so situated that a thousand rays like that which would pass through the hole finally converge at one point on the retina, and consequently disturb it as much or about as much as if the object were a thousand times more illuminated. For all[a] the rays leaving point G are diverted toward the axis GBE upon entering the aqueous humor, and from there upon entering the crystalline lens, and again upon leaving the crystalline lens to enter the vitreous humor, and converge at point E; and they cause there the same pressure vibrations as those at point G. As a result, the same color we see at point G is seen on the image of the object at point E, as can be seen in an artificial eye. Thus, all the rays leaving point G pass through the opening of the pupil and, converging on the retina at point E, make, as it were, two cones of light whose vertexes are on the same axis GE. What I say about the rays leaving point G must be understood not only for points H and I but also for all the points of the object.

The reason for the mobility of the iris and the fluidity of the aqueous humor.

29. But when the opening of the pupil is too large, the rays farther from the axis GE, which can be useful in distinguishing objects, though confusedly, when we are in a very dark place, render their image confused when they are well illuminated, as I have proved.[b] As a result, for the perfection of the organ of sight, the opening of the pupil must increase or diminish as objects are more or less illuminated and even according to our desire to distinguish their parts by looking at them more closely. For when they are well illuminated, the smaller the opening of the pupil is, the more distinct the image of them depicted on the retina is. This too was necessary to preserve sight. For if the opening of the pupil were too large then when we had to look at overly brilliant objects, the rays of these objects converged on the retina would soon dissipate its delicate fibers, as we see the sun's rays converged by a magnifying glass burn what is exposed at their focus, or at least they would diminish the delicacy of the fibers of the retina in such a way that we would no longer see anything in a dark or badly lighted place. Now, this change of the pupil's opening in the circumstances I have just mentioned is easily noticed, especially in children. Thus, God has placed in the delicate covering of the iris mechanisms so dependent upon the action of light on the optic nerve and upon the action following from our intention to distinctly see the particles of an object close to us that they simultaneously act in conformity with them; but they act in such a way that this thin covering always preserves a perfect roundness in man's eyes in its various openings. And because this skin of the iris is too delicate to pass through a humor like the vitreous or crystalline

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[a] See the first figure <p. 721>.

[b] Number 17 above.

humors, God immersed it in a humor as fluid as water that easily divides and immediately reunites.

Reasons for the particular convexity of the cornea and for the different nature and disposition of the three humors.

30. As the eye must be very mobile in view of its uses, and must be able to turn easily in every direction, God gave it a round shape. But assuming that it was of an equal convexity throughout, or that the convexity of the cornea was hardly different from that of the hard covering, if on this assumption the globe of the eye were filled with only a single humor, be it as dense or of as great a refraction as glass, the rays leaving the object would undergo only one refraction in it and would not converge on the retina, but well beyond it. Besides which, even if they could converge there when coming from distant objects, they could not do so when coming from an object near us. Thus, to expedite the convergence of rays, and to place the image of objects precisely on the retina, God first gave the cornea, under which is the aqueous humor, a greater convexity than the rest of the globe of the eye, because the most convex lenses converge rays passing through them sooner than other lenses. Second, He placed under the aqueous humor the crystalline lens, which He formed from a denser material and whose refraction is greater than that of the other humors, and further, He made it much more convex, especially under the point at which it touches the vitreous humor. Third, to move the crystalline lens some distance from the retina and to provide the necessary space for the converging rays leaving it to converge exactly on the retina, He placed between it and the crystalline lens the vitreous humor, which is in greater supply and occupies more space than the other two together. Thus, the rays that leave each visible point of an object, in order to converge exactly at as many points on the retina, undergo three refractions, which all tend toward the axis BE: the first upon entering the aqueous humor, for the refraction they undergo upon entering and leaving the cornea should not be counted; the second upon entering the crystalline lens; and the third upon leaving the crystalline lens; and this last refraction, it seems to me, must also be rather great due to the great convexity of the crystalline lens on the side touching the vitreous humor.

Reasons for the disposition of the muscles and especially the oblique ones.

31. But as it is necessary for the perfection of sight that we be able to see objects nearby and at a distance, and as it is impossible for the rays leaving an object at different distances to converge exactly on the retina, as I have proved,[a] God placed the crystalline lens, whose refraction is greatest, between the other two humors, and suspended it by the ciliary ligaments in such a way that it can withdraw from the retina somewhat when objects are too near to be seen distinctly. And here is how it seems to me that this is brought about.

When the crystalline lens is at its normal distance from the retina and is suitable for seeing objects at a medium distance, and the desire arises to look closely at some very small object, a fly for instance, to distinguish its parts, the four straight muscles, which are equally tensed, keep the eye in a fixed position, and the two oblique muscles surrounding the eye, which are also tensed, compress it. For it should be remembered that they are both attached, one next to the other, to the globe of the eye on one side and on the other to the inner corner of the eye. It is true that the superior oblique muscle is attached to the bone some distance from the inner corner, but since the leading block through which it passes is attached to the inner corner of the eye by a membranous ligament, we can regard this muscle as being attached to it. Since these two oblique muscles by their opposite tensions compress the globe of the eye they surround, they press the vitreous humor somewhat, which pushes the crystalline lens forward, and perhaps even pushes the retina backward. When the crystalline lens advances, the ciliary ligaments, which tend toward it in a straight line, curve somewhat in the direction of the vitreous humor, for two reasons. First, because as the crystalline lens advances, it approaches a more narrow circumference of the globe of the eye, which relaxes the ciliary ligaments; second, because as the crystalline lens presses the aqueous humor, the latter presses in all directions to make room for itself, and its action falls upon what resists it least, i.e., upon the relaxed ciliary ligaments; thus, it curves them all around the crystalline lens and occupies the spaces left to it by their curvature. It is also quite likely that the cornea is stretched somewhat by the compression of the aqueous humor. The distance from the crystalline lens to the retina is thus sufficiently increased to see distinctly an object very closely as long as the muscles firmly compress the globe of the eye. But as soon as they cease to compress it, it necessarily resumes its sphericity, and consequently all the humors resume their normal position. This is the change, I believe, that occurs in the eyes when we strain our vision and wish to see small objects very closely.

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[a] Number 20 (above).

The crystalline lens does not change shape for vision of near and distant objects.

32. It is true that if the crystalline lens could change its shape through the contraction and relaxation of the ciliary ligaments, if it could increase its convexity when objects approach and decrease it as they withdraw, this would be another means of causing the image of objects to fall precisely on the retina. But this second means does not seem practicable to me, because the crystalline lens is rather tough and viscous, and has no fluidity. As a result, it cannot keep changing its shape. Thus, it is impossible for it to increase its convexity through the relaxation of the ciliary ligaments, and to decrease it through their contraction. These ligaments serve only to keep it in such a position between the other humors that the axis of the two convexities of which it is composed always passes through the middle of the pupil. Now, since it is necessary, in order for the images of near or distant objects to fall precisely on the retina, either that the crystalline lens change its convexity while remaining in the same place or that it change its place, approaching or withdrawing from the retina, while its convexity

remains the same, it follows that the first means I have explained is the true one and the one that is used. Indeed, when we strain our vision to see a small object very close-by, we feel the effort of the muscles that compress the eyes, and that even cause pain, particularly in those who have not acquired the habit of looking at small objects close-by. It even seems to me certain that the leading block was made and placed where it is only to assist the muscle in the precise or constantly equal compression it must maintain in order for us to distinctly see a very close object for a long time—which is necessary for the greatest perfection of sight.

The main use of the leading block.

33. To understand this well, you must know (a) that the quantity of rays entering the eye increases in inverse proportion to the squares of its different distances, and that if an object is two inches from the eye, for example, nine times more rays will enter it than if it were six inches from it; (b) that as a determinate quantity of rays is necessary to disturb the retina sufficiently and to make us see objects, the opening of the pupil would have to diminish as the rays increase; (c) that the smaller the opening is, the more distinct the image is, because fewer of those rays farther from the axis that confuse it enter the eye. From this it must be concluded that in order to properly distinguish the particles of objects, we must look at them as closely as possible. But we can see them from very close-by only by straining our vision, and by moving the crystalline lens away from the retina through the compression of the globe of the eye. Now, since its covering is tough and elastic, it constantly resists the muscle compressing it; and if ever this muscle were not equally tensed at the spot where it is attached to this covering, inequality would occur in the distance between the crystalline lens and the retina, and consequently in the clarity of the image and the perception of the object. How then to make vision as perfect as it must be with regard to our needs. This is how. Since it is difficult for a very tensed muscle to maintain a precisely equal tension for a long time, God, in order to assist the muscle compressing the eye and to make the slight inequalities in its tension imperceptible, made it pass through the cartilage called the pulley so that the friction of the muscle against the cartilage might partially resist the elastic action of the envelope of the eye. For example, if I had a very heavy body attached to the end of a rope, and if I wanted to hold it above the ground for a long time, and always at precisely the same height by a constantly equal tension of my arm muscles, I would certainly give way very soon, and I would not succeed in holding it at precisely the same height. But I would easily succeed and would give way much less if I passed the rope through a ring securely attached somewhere, and if I then pulled the rope downward, for its friction against the ring would assist me in keeping this heavy body still and at the same height. It seems to me certain, then, that the main use for the pulley is to assist the superior oblique muscle in its action against against the elasticity of the tough covering of the eye that it compresses, and that it must always equally compress so that we might see objects nearby equally well and without interruption.

Furthermore, it seems to me certain that the main use of the oblique muscles is not to turn the eye in the way we see that it turns, for the globe of the eye does not turn at all on its own axis. For if that were so, the oblique muscles could turn it alone; but this is not so, is impossible, and would even be useless. Now, this turning of the eyes that we see can easily happen through the successive action of the straight muscles. Indeed, when you roll your eyes, you clearly feel that this turning is not uniform, as it would be if it were the effect uniquely of the oblique muscles surrounding them, but that it occurs through slight jerks, indicating the successive action of different muscles.

An objection against the use I attribute to the oblique muscles, and the reply.

34. You will perhaps tell me that the eye's covering is too tough to respond to the stress of the eye's muscles; but the reply is easy. For when it is too tough, you cannot see anything close-by very distinctly, and this is what happens to old people whose covering has been made too tough by age. But these same old people when young saw equally well things at a distance and close-by, but since the covering of their eyes has become inflexible, the muscles can no longer make any change in them. Thus, old people must have recourse to the second method, and since they cannot increase the convexity of the crystalline lens, in order to see up close they use convex spectacles that facilitate the convergence of rays and make the convergence fall exactly on the retina. Furthermore, should the vitreous humor be at all compressed, it must, because it is in plentiful supply, noticeably remove the crystalline lens from the retina given where the crystalline lens is, suspended in equilibrium between the two other humors. When I say that the compression of the vitreous humor must noticeably remove the crystalline lens from the retina, I mean in relation to the very slight change in the covering of the eye. I mean that this compression removes the crystalline lens sufficiently for the rays leaving an object, for example, a half-foot away, to converge exactly on the retina. Now, the difference between the distance the crystalline lens must be from the retina in order to gather there the rays leaving infinitely distant objects, the stars, for example, and the distance necessary to gather there the rays leaving an object only a half-foot from the eyes, is very slight. It comes to only about six-elevenths of a ligne according to the comparison I made[a] between the crystalline lens and a magnifying glass of a six-ligne focus. And it comes to only about one-fifth of a ligne if you compare the refraction of the eye's humors to that of a magnifying lens of a four-ligne focus. Thus, should the muscles compressing the eye act on the vitreous humor at all, they can sufficiently remove the crystalline lens from the retina to make the rays of objects at a distance from a half-foot to infinity able to converge there.

A reflection on the infinite wisdom of God, which appears not only in the excellence of His works, but much more in the simplicity of the ways through which He constructs them.

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[a] Number 21 (above).

35. There you have the main reasons for the composition of the eyes and for the disposition of the transparent humors they contain. Now, if we reflect on this at all, we clearly see that God formed them in relation to the properties of light, or in relation to the action of ethereal matter, of which He is also the creator and mover, so that, with God always acting in the world in a uniform and constant manner through the general law of the communication of motion (for the transmission of rays and their different refractions is a consequence of it) and in our souls through the general law of their union with the body, i.e., according to what reaches our brain through our eyes, we might be sufficiently advised for the good of society and preservation of life, of the presence of, and the differences in, all the objects surrounding us. We see that He who made the eyes made everything else, that He who found the secret of transmitting instantaneously in all directions in a straight line the rays produced or reflected by luminous or illuminated objects, rays, I say, of different kinds, and yet that constantly intersect and never confuse each other, intended to form the eyes so that by means of these rays He could, by acting in a uniform manner in us as in everything surrounding us, join us to His other works and make us admire their order, beauty, and grandeur. In a word, we see that it is the same Wisdom that ordered everything, the same Power that has produced everything, the same Providence that conserves everything.

36. But if the Wisdom of God that appears in the little we know of the construction of the eyes surprises us, how astonished would we be if we could follow the tiny filaments of the optic nerve right up to the brain and see what takes place in its principal part? These filaments of a hardly imaginable delicacy, very slightly disturbed by the light reflected from objects, undoubtedly cannot by themselves produce in our body all the motion they excite in it; but what are the mechanisms they release in the brain, or rather how can they direct the spirits contained in it to disperse throughout the body to produce in it the different motions required by different objects? These tiny disturbed filaments control the flow of animal spirits in our members, for we are well aware that this occurs in us independently of us; how then are they made to flow into one member rather than another, sometimes slowly and in small amounts, sometimes quickly and in abundance, and generally in relation to the good of the body.

When a stone, for example, is thrown toward me in a straight line, the image of the stone on my retina quickly increases with its speed and changes place not at all or very little. How can the filaments of this image that continue to the brain impel or direct the spirits quickly and plentifully enough to make me instantaneously turn and incline my head? It is not exactly the image of a stone that makes me turn my head, nor is it the rapid growth of its image if it changes place in my eyes as when the stone is not coming directly toward me. It is therefore the rapid growth of its image together with the disturbance of the same fibers of my retina that makes me mechanically incline and turn my head to avoid the blow; but what are the mechanisms by which this and an infinity of similar effects are brought about? This men will never understand.

37. If instead of following the optic nerve as far as the principal part of the

brain, to which all the parts of our body are related, we retrace our steps and try to discover something of God's means of forming, nourishing, and conserving the parts of which our eyes are composed, will we not perceive in all this the profundity of the Creator's wisdom? How are those tiny tubes constructed that choose among the various parts of which the blood is composed those suitable for allowing light to pass, in order then to distribute them in the transparent humors; and how are those constructed that separate the black humor suited for deadening rays of light and that finally attach it to the ciliary ligaments and to the bottom of the iris in such a way that the humors touching the iris can neither separate it from them nor dissolve it? How do the tiny tubes choose in the blood liquids of different consistencies, very fluid for the aqueous humor, those suited for becoming firm for the crystalline lens, and finally others of a medium consistency for the vitreous humor? How do they distribute them equally in each eye, and make the crystalline lens equally convex? For when one of them happens to be more convex than the other, we see objects smaller and nearer with this eye than with the other. How is all this and an infinity of similar effects brought about? Certainly the mind senses, as it were, the infinite in the immutable art of the Creator, but it can understand of it only what is in its own scope.

38. It is true that there are few people, and perhaps no one, without some slight defect in their eyes; but it is very rare to find anyone with any considerable defect and lacking some part essential to vision. Now, when we know the true cause of these defects, so far is this from diminishing the lofty idea we should have of the wisdom of the Creator that the mind thereby assumes a perspective whence it discovers it to be without limits. For a proper understanding of this, it must be realized that it is impossible for bodies organized in a thousand ways in relation to particular ends to be constructed by the general laws of the communication of motion, which depend on this law, that every body is moved in proportion to the force impelling it, and in the direction in which the force impels it, and that the entire utility to be drawn from these laws with respect to organized bodies is to develop and enlarge the parts of which the embryos or seeds of animals or plants are composed. All those who have some knowledge of anatomy, and who have noted the prodigious number of an animal's parts, the connections between these parts and the various uses to which they are destined, will undoubtedly judge that the collision of bodies might well destroy living bodies, but that it is not suited for constructing their various organs. From this it is easy to conclude that God, who through His ordinary Providence governs material beings according to the laws of motion, at the beginning of the world formed in our first parents all the men who were to be born of them, that He did the same thing in animals and plants, and that He thereby gave them the fecundity and power of producing their kinds. Nonetheless, it should not be concluded from what I have just said that the men of today had at the time of Adam, in their indefinite smallness, the same proportion of their members that they now have, but only that they then were such that as a result of the laws of motion they could gradually grow during six thousand years to become today such as we see them. For if these tiny embryos, or rather these embryos of embryos of embryos, and so on, did not have a

crystalline lens, for example, or optic nerve, or the leading block I discussed, or the first rudiments of all those parts destined to the same end, it is clear that the general laws of motion would never have been able to construct them.

39. It appears to me certain, then, that God through particular volitions initially formed man and all the different natures of animals and plants and at the same time something in each of them to preserve their kind, and also at the same time through particular volitions (for it could not be otherwise before the collision of bodies) so regulated the first motions of matter that by subsequently following this simple and general law, that every body is moved to the extent and in the direction it is most impelled, the tiny embryos gradually grow and develop. Indeed, we do not see that God now makes animals and plants of a new species, and we daily see that the last are born of the first; for we are today disabused of that bizarre thought that insects are born of rot, insects in which there are often more organic parts and in which there appears more art than in larger animals. God now rests, as Scripture teaches us [Gen. 2:2]—not that He ceases to act, for the same Scripture teaches us that He acts constantly, but that all He does is to follow the general laws He has established. Now, it is a result of the laws of motion, laws according to which God in His ordinary Providence acts and must act on matter, that the tiny embryos, which can be only material, should grow and develop for six thousand years; and consequently it is a result of these laws that someone should be shortsighted, or have the crystalline lens too convex to see distant objects. Leaving aside, then, those with good vision, why does this one have his crystalline lens too convex? Because God did not form his eyes as they are today by a particular volition. Because they were made six thousand years ago, and because He has gradually led them to their present state through the efficacy of law or a general volition so simple that it seems more suited for destroying than forming an organ as marvelous as that of vision. For indeed it is through this general law that our eyes and even our bodies are destroyed, as it is also through it that they grow and develop, though after God created them and prepared them to receive their growth through it. But had God formed the eyes of this man through a particular volition so that he might see well at a distance, certainly he would be without this defect, he would be perfect like everything God created at the beginning of the world, for all His works were then in a state of utmost perfection, as Scripture as well as reason teach us. "Viditque Deus cuncta quae fecerat & erant valde bona."[a]

40. Knowledge of the cause of the defect I have just spoken of raises the mind and gives it a point of view, as it were, whence the wisdom of the Creator appears so brilliant and profound that it dazzles us and we are lost in it. For in the end it is impossible to imagine the frightening smallness of the primitive parts of our eyes at the time of their creation, still less their configuration and arrangement, still much less how their growth and developement took place in the following years through the efficacy of such a simple law, that everybody is

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[a] Gen. ch. 1 [v.31].

moved to the extent and in the direction in which it is most impelled. The crystalline lens of a given man has become too convex; this is a defect, I agree. But general laws in different circumstances cannot produce the same effects. These laws are established as wisely as possible when their fecundity corresponds to their simplicity, i.e., when the relation between their simplicity and the excellence of the work they bring about express as perfectly as possible the attributes of the Creator. For God wills to honor Himself not only through the excellence of His work, but also through the wisdom of His ways. If He had in view only the excellence of the work, to which work would He determine Himself in order to honor Himself perfectly, He who can produce an infinity of works one more perfect than the next? But He acts as wisely as possible, or in the way worthiest of His attributes, in the order of which He found His law and all His motives, attributes He cannot contradict or ignore; for He loves them invincibly since His will is but the love He bears for them—He acts, I say, in the best way possible when from all possible works He determines Himself to produce, not the one most perfect in all its parts, but the one that together with the ways by which it was produced most perfectly expresses His attributes. Thus, while some defects may be found in the eyes of some individuals, God alone is the author of them. And resorting to a blind nature, plastic forms, the soul of the mother or of those who have these defects in order to explain them is of good intention, but it is to form chimeras. It would be better to believe either that these defects in individuals contribute to the perfection of the entire work, or that God always makes use of them for the good of those who have them.

41. When we very attentively consult the idea of the infinitely perfect being, we clearly see that His conduct, as well as His essence, must be infinitely different from ours. But when these moments of serious attention have passed, we make Him create and think and act as we feel we would think and act ourselves; for since the idea of the divinity does not make itself perceptible, it easily grows dim and darkens, but the soul is always present to itself and always perceives itself. This is why it is led to humanize all things, even the Divinity. This is why some imagine that God creates everything through particular volitions, others that He made either the angels or some imaginary beings responsible for the government of the world. These would have it that God initially gave each creature a real power and, in addition, to certain of them knowledge they call instinctive in order to depreciate it (which nonetheless is often such that no one can attain any knowledge similar to it), and that with that done God remains at rest and no longer interferes with anything. And those more religious, but of about the same opinion, rightly maintain that God acts continuously, but that all His action in ordinary Providence is only the simultaneous cooperation without which secondary causes can do nothing. I say this only to convince you that in order not to humanize divine Providence—a capital error and the source of an infinity of other very dangerous errors—you must consult the idea of the infinitely perfect being with all the attention of which you are capable and attribute to it that Providence which bears the mark of an infinite wisdom, and so that you

might each thereby be able to answer yourself about the difficulties that might be generated against my views by the inclination we naturally have to humanize all things.

42. I admit that the imagination is terrified by what at the time of Adam must have been the indefinite smallness of not only our bodies but also the organic parts of our bodies, parts some of which even today when they are fully developed are so small that they surpass vision. And since there are seeds and insects that can be seen only with good microscopes, the imagination rebels even more; and reason itself is astonished when we take a pen and calculate what they were six thousand years ago, or how they contain those which will be born of them until the end of the ages. But reason is reassured when on the one side we are convinced by geometry that matter is infinitely divisible, and on the other through faith and even reason that the wisdom of God has no limits. Indeed, I am convinced that God, who undoubtedly was able to create an infinity of substances of a different nature, since His essence, being infinite, can be participated in in an infinity of ways, chose (in addition to the minds He created to be possessed of Him) matter, because He wanted an infinitely divisible subject to correspond to His inexhaustible wisdom, a subject that by its essence could set no limits at all on the exercise of His art and power; I am also convinced that if matter were reduced to nothing through the division of its parts, or to an indivisible part, and if it were thus capable of arresting the simple course and fecundity of Providence, He would never have drawn it out of nonbeing. However that might be, it seems clear to me that the abridged[a] idea I have just given of God's conduct bears more of the mark of an infinite wisdom than that ordinarily formed of it, and if that is so, it certainly approaches the truth more than the others do, for God acts always in God, always according to the immutable order of His attributes, which are His law and motive, because He is pleased in them and can neither contradict nor ignore them. I hope I shall be forgiven this digression into which my topic has led me.

43. I believe I have given above the main reasons for the composition of the eye and the disposition of its parts, the end of which remains to be noted, *viz.*, that since God acts in our soul in a way that agrees with His attributes, i.e., always in a constant and uniform way according to what reaches our brain through our eyes, we might be sufficiently advised in relation to society and the preservation of life of the presence of and differences in all the objects surrounding us. For God alone acts in us and advises us of all these things; but as He does so for us in our stead due to our ignorance and impotence, He does so only as we ourselves would do if we could act in ourselves according to the knowledge we would have of what is occurring in our eyes and our brain upon the presence of objects. Assuming, then, that our soul had all knowledge and power, and the rest of what I have noted in number 26[b] above, let us see how it would discover what is occurring in the bodies surrounding us.

I open my eyes in the middle of the countryside and I instantaneously see an infinity of objects, some more distinctly than others, and all differing among themselves either by their figures, or by their colors, or in their distances, or in their motion, and so on. Among other things I see at about a hundred steps from me a large white horse running toward the right at a full gallop. How can I see it thus according to the assumption I have made; this is how.

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[a] A more exact and more extensive explanation of Providence will be found in the *Dialogues on Metaphysics and Religion,* dialogues 9, 10, 11, 12, 13.

[b] See this number 26, above.

I know according to the assumption of number 26 that all rays of light travel in a straight line and that those reflected from above the unknown object, i.e., from the horse, upon entering my eyes converge on the retina, and that the principal ray, the one that is the common axis of the two small cones explained above[a] disturbs it the most. I must therefore judge that this ray falls on it perpendicularly and that therefore this horse is somewhere on this perpendicular line; but I do not yet know its distance.

Second. I know that it is standing with its head turned to the right, although its image is reversed on my retina. For since I know that my retina is not flat but concave, geometry teaches me that perpendicular lines on a concave surface necessarily cross and that they can be parallel to each other only when they fall on a plane surface, and that therefore I must judge that its situation is opposite to that of its image.

Third. I know also that it is about a hundred steps away, because I simultaneously have on my retina its image and that of the ground which it is on, by which I know roughly its distance; I judge its distance in this way and by other means as well that need not be explained here.

Fourth. I know it is a large horse, for since I know its distance, the size of its image, and the diameter of my eyes, I construct this proportion: as the diameter of my eyes stands to its image, so the distance of the horse stands to its size; and comparing its size with that of other horses I have seen, I judge that it is one of the large horses.

Fifth. I know that it is running because its image changes place in my eyes, and that it is running at full gallop because I know the space its image quickly traverses on my retina; from this I conclude, by constructing the same proportion I just did, that it traverses a large space in a short time.

Sixth. I know that it is white, because I know what kind of disturbance the rays it reflects produce on my retina, and since I can act on myself, I give myself, without ever erring, a given sensation when there is a given disturbance on my retina, and through it, in my brain.

Seventh. Finally, if I incline my head or lie down on the grass while looking at the horse, its image will change place on my retina and no longer disturb precisely the same fibers in it; yet I shall always see it the same. Or assuming that it stops and I begin to run while steadily looking at it, its image will change place in the fundus of my eyes, and yet I shall see it immobile. This is because I at the same time know (a) that I have my head inclined and (b) what the situation of my eyes is, or the precise amount of motion I am giving myself by running, and because reasoning properly, I discover that the motion belongs only to me.

Eighth. If I approach the horse while looking at it, I shall see it as having the

[a] Number 28.

same size although its image continuously increases on my retina, and the height of this image is ten times greater when I am not more than ten steps from it than when I was a hundred. This is because optics teaches me that the various heights of the images of an object stand to each other as the inverse of the distances from the object, and because knowing that at each step I take this proportion remains the same, I continue to give myself the same sensation.

These are some of the judgments and inferences the soul would have to make according to the assumption I made[a] in order to see only one object; and it would have to make similar ones with respect to all the objects it sees with a glance of the eye, and it would have to make them instantaneously and always repeat them upon the least movement of the eyes, and finally, duplicate them without ever erring when the eyes are in the same situation. Therefore, it is not we who make them but God alone who makes them for us. This is why I called these judgments and inferences *natural*[b] when, to speak as do others, I attributed them to the soul in order to make it understood by this word that it is not really it which makes them, but the Author of nature in it and for it. It was necessary to speak of these judgments because without them our various sensations cannot be explained, since they presuppose them and necessarily depend on them.

Many consequences can be drawn from what I have just said that are all of very great importance.

First. That God alone can give us the various perceptions we have of objects upon each movement of our eyes. This is too evident, after what has just been said, to pause here to prove it. It suffices to say that neither our soul nor even any finite spirit can instantaneously make an infinity of inferences, and that no created and particular being can be a general cause acting at each moment in all men generally.

Second. From this it follows that there is here no simultaneous cooperation, for such cooperation presupposes an efficacious cause ready to act to which God joins His cooperation. Now, no cause, whatever power might generously be attributed to it, can make use of it here, because its use depends on instantaneous inferences it is incapable of making.

Third, That God acts through laws or general volitions and always in the same way in the same circumstances, and that the occasional causes that here determine the efficacy of these laws to produce their effects are the changes that occur in the brain through the mediation of the eyes compared with those that accompany the ordinary motion and situation of the body. And it is necessary for God to act through general laws in the ordinary course of His Providence not only because this way of acting bears the mark of wisdom and immutable divinity but also because without it there would be no order in nature, no principles of physics, no sure rules of conduct.

Fourth. That these general laws are determined, as far as possible, according to the immutable and invariable truths of geometry. If, for example, having closed one eye you look at a small object suspended on a string three or four feet from you, the perception of its distance is not as exact as it would be if you looked at it with both eyes open, because a triangle is not determined when there is but one angle and one side given or known. *See chapter 9 of book 1, number 3,* where this is explained.

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[a] Number 26, above.

[b] Ch. 7 of book 1.

Fifth. Finally, it follows that we do not see bodies in themselves, and that if, through the flow of animal spirits or otherwise, there were excited in the brain disturbances like those we now have with open eyes, and should all external bodies be annihilated and hence be absolutely invisible in themselves, we would still see what we now see, as a result of the general laws concerning the union of soul and body; and this is what happens during sleep, in those in a high fever, and in madmen. But what is it that we see immediately and directly, what is the immediate object acting on the soul and modifying it with all the perceptions we have of objects? This is undoubtedly the most important question. I have tried to resolve it in the third book of this work where I discuss the nature of ideas, and I hope you will find it elucidated and even demonstrated, especially if you join to what I have said about it in this work my *Réponses à M. Arnauld*, or only that reply I made to a third *Lettre* of this celebrated author, which is printed in the fourth volume of the *Recueil des mes Réponses*.

In order to finish this last addendum in a useful way, I beg the reader to review in his mind what I have said of the admirable art that appears in the construction of the eyes, of the relation they have to the properties of light, of their connection with the brain and through the brain with the rest of the body, of the simplicity of the general law that developed them and gradually led them to their present state, and finally, of the use that God according to the laws concerning the union of the soul and body makes of them, at each moment and in all men. Let him pass from the sense of sight to that of hearing, which seems to me more admirable for its construction, although much less necessary in relation to the present life, and from this sense to a third. From man let him descend from the elephant to the gnat, apparently richer in organs than the elephant and perhaps even man. Man has only one crystalline lens in each eye and the gnat has several thousand of them, which are easily distinguished with a microscope. From there let him carry on through the plants, which are infinitely more prolific than the animals. For everyone knows that a pruned tree is reborn, as it were, and that for each branch cut back several others grow that bear everything, both flowers and fruit, of which a single seed would with time produce entire forests. If in addition to all this one reflects as I have on the development of our eyes over six thousand years, the idea one must have of the divine Wisdom[a] will undoubtedly be greatly augmented. But I feel I must say that should one have traversed the entire universe and have discovered all the marvelous arrangments of matter including the animals of which one sees an infinity hundreds of millions of times smaller than a fly, one would still have seen, to speak as does Scripture,[b] only what the

[a] See the letters of de Puget and Leeuwenhoek.

[b] Prov. ch. 8. [vv. 30–31].

wisdom of God delights in doing, only a work that must perish, only the shadow and figure of the future world that will subsist eternally, because it is the eternal object of God's indulgence, the end and masterpiece of His works.

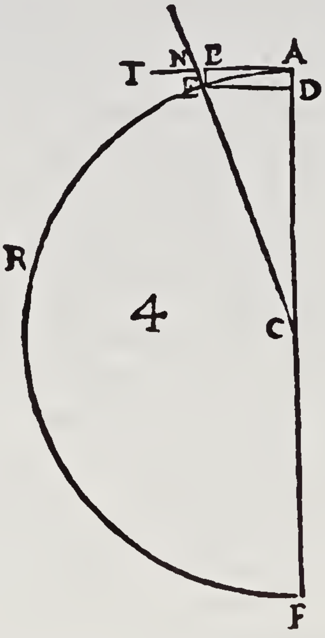
> *Beati qui habitant in domo tua Domine in saecula saeculorum laudabunt te.*

Addendum

For the very end of the work.

It was found desirable for me to produce here two demonstrations that I had assumed as known so that those who did not know them or perhaps did not know where to find them could read them. Here is the first.

The centrifugal force of bodies is equal to the square of their speeds divided by the diameter of the circle they describe with their uniform motion.



A body A attached to the end of string AC secured at C rotating around point C will strain against the string because it tends to recede along the tangent AT. This is agreed upon in physics, and the strain is called *centrifugal force.*

Demonstration.

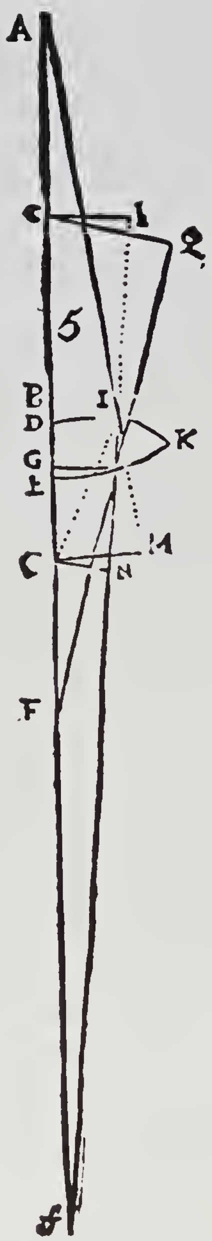
On the circle ARF, take an arc such as AE, which arc I assume to be infinitely small and consequently equal to its chord by conceiving the circle as a polygon with an infinity of sides. And imagine the tiny parallelogram ABED. In the infinitely short time the body A describes the arc or chord AE, it is impelled by two forces, one along the tangent AT and the other along the line AC. The line AB or DE expresses its speed and AD or BE the centrifugal force by which it stretches the string. For in this case the differential BN over AB, i.e., the amount by which the chord AE surpasses AB, should not be considered, nor the amount by which AF surpasses FD, which is a differential of the second order, because ED is assumed to be infinitely small in relation to FA. Thus, we can suppose BE to be equal and parallel to AD, and through the property of the circle draw this geometric proportion: FA:DE::DE:AD or BE, which is equal to DE^2/FA. Therefore, the centrifugal force BE is equal to the square of the speed of the body A divided by the diameter, i.e., the force that acts at each instant or infinitely short time and that is expressed by BE stands to the force or the speed of the body A, which acts at the same instant and which is expressed by the line DE, as this speed stands to the speed or force that in the same infinitely short time would make it travel the diameter AF. For the lines AD, DE, and AF express forces or speeds. Thus, given our assumption that DE is infinitely small, AD is an infinitesimal of the second order, and the excess of BN over BA or ED of the third. And by supposing that AD, which expresses the centrifugal force, is an infinitesimal, AF will be an infinitely great quantity of the second order, and will express an infinite force of the second order with respect to the centrifugal force.

Explanation of what I said on p. 730. The general proposition of dioptrics of which that assumed in article 21 of the last Elucidation is only a corollary.

Given a lens of the same or different spherical concavities or convexities, either concave on one side and convex on the other, or, finally, flat on one side and concave or convex on the other, find on the axis of the lens the point of convergence or union of the rays that leaving a point of a luminous or illuminated object finally meet after having undergone two different refractions, one upon entering the glass, the other upon leaving it; in a word, find the location of the image representing the object. And since only the rays near the axis render the image distinct, and since those distant from it render it confused, the only question here concerns the point of convergence of the rays near it. We assume that the refraction of glass is roughly three to two (this is known from various experiments), that is, that the sine of the angle of incidence stands to the sine of the angle of refraction as three stands to two when from air it enters glass, and consequently, as two stands to three when it leaves glass to enter air.

Preparation for the demonstration.

Let A be the point of the object from which the rays leave, BK the arc of the circle of convexity of the lens would form with its ray BC. AIM is one of the rays leaving point A that I assume enter the glass, very close to point B, so that the three lines AI, AD, AB, and the two short lines DI and BI, are considered equal to each other. From point C, the center of the convexity BIK, let a perpendicular CM be drawn to the ray AIM, and another CN to the refracted ray If. These two short lines will be the sines of the angles of incidence and refraction, and since the right angles at M and at N have the same hypotenuse IC, which is the ray of the lens' convexity, CM will be the sine of the angle of incidence and CN that of



refraction, and consequently, CM will stand to CN as 3 stands to 2. Now, let the short line HG* be drawn from point H and the line fIP from the point f where the refracted ray If meets the axis Af, and from the center c of the other convexity of the lens EHK, the perpendiculars cP to the extension of the ray refracted in the first instance, and cQ to FQ which should be the ray refracted in the second instance upon leaving the lens at point H to enter the air. cP will therefore stand to cQ as 3 stands to 2, for reasons similar to those I gave for the first refraction. With this assumed and sufficiently proved by what I said about refractions in the last Elucidation, it is a question of finding the point of convergence F, on the axis

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*The letter H, which is missing in the figure, should be where the line FQ cuts the arc EK.

Af, of the rays leaving point A of the object, i.e., the distance EF, after having found the distance Bf.

To do this, let the indeterminates be named as follows: the distance of the object $AB = d$, the ray of the circle BIK, *viz*, $BC, = r$, the sine of the angle of incidence, or $CM, = s$, and $CN = 2s/3$, and the unknown $Bf = x$. I shall name the other lines when I have point f; this is to avoid confusing the letters.

To find the unknown Bf=x.

With the ray AI very close to the axis, we shall have: $AC(d+r)$ stands to AD or $AB(d)$ as $CM(s)$ stands to $DI = sd/(d+r)$. And $Bf(x)$ stands to $fC(x-r)$ as $DI(sd/(d+r))$ stands to $CN(2s/3)$. From which we draw the equation $2sx/3 = (sdx - sdr)/(d+r)$, which reduces to this one, Bf or $x = 3dr/(d-2r)$. By this value of x we see that if d equaled 2r, the rays would be parallel, that if it were greater than 2r, the rays would intersect below the lens as in the figure, and that if it were smaller, point f would be found beyond point A and that the rays would still be divergent after refraction, because in this case the value of x would be negative. We see that if D were infinite, the focus of the first convexity would be three times the distance of the ray, 2r becoming *zero* in relation to d; that if r were infinite, i.e., if the lens were flat, the point of convergence f would be found above point A and 3d/2 from it, the value of x becoming negative. We see, finally, that with two of these three magnitudes x, d, and r given, we easily have the third through the equation $x = 3dr/(d-2r)$. Assuming, for example, that the ray r of the lens' convexity and the distance Bf of the image are given, we shall easily find the distance d of the object AB: first, by multiplying each member of the equation by $d-2r$; second, by substracting from both parts 3dr and adding 2rx; third, by dividing by $x-3r$; and we shall find $d = 2rx/(x-3r)$, from which we can draw the same results as from the first. I say this only to illustrate the fruitfulness and utility of the general solutions of algebra. Now it is a question of examining the second refractions undergone by the rays upon leaving the lens, which refractions give the point F of convergence after the two refractions.

To find the unknown EF=z.

To do this, let the thickness of the lens BE be named e; Ef or Gf or $Hf = y$; the ray of the convexity EHK, which is $Ec, = a$; the sine of the angle of incidence of the ray refracted in the first instance leaving the lens at point H is $cP = t$, and consequently, the sine of the second angle of refraction $cQ = 3t/2$; and finally, FG or FH or $FE = z$.

With the ray fH very close to the axis, we shall have these proportions: $fc(y+a)$ stands to $fE(y)$ as $cP(t)$ stands to $GH = ty/(y+a)$, and $cQ(3t/2)$ stands to $GH(ty/(y+a))$ as $Fc(z+a)$ stands to $FE(z)$.

Multiplying the extremes and the means of this proposition, we shall have the equation $3/2(tz) = (tzy + aty)/(y+a)$, each member of which being divided by t and multiplied by 2 and by $y+a$, we shall have $3yz + 3az = 2yz + 2ay$; subtracting 3yz from both parts of this, we shall have $3az = 2ay - yz$; and finally dividing it by $2a - z$, we shall have $y = 3az/(2a-z)$. Now y or Ef is equal to $x - e$, or $Bf - BE$.

We shall therefore have the equation $x-e=3az/(2a-z)$; replacing x by its value $3dr/(d-2r)$ in this, we shall have $3dr/(d-2r)-e$ or $3dr-(ed+2er)/(d-2r)=3az/(2a-z)$. And multiplying each member by $d-2r$, and by $2a-z$, we shall have this: $6ard-2aed+4aer-3drz-2erz+edz=Eadz-6arz$; changing to one side the three terms with the unknown z, we shall have $3adz+3rdz-edz-6arz+2erz=6ard-2aed+4are$, and consequently we shall have the unknown

$$z=\frac{6ard-2aed+4are}{3ad+3rd-ed+2er-6ar}=EF\,. \qquad (1)$$

If we ignore the thickness of the lens, we erase all the terms with $e=o$, and we shall have

$$z=\frac{2ard}{ad+rd-2ar}. \qquad (2)$$

If the distance of the object is infinite, or if the rays falling on the retina are considered parallel, as when objects are at a distance, erasing all the terms in which d does not occur will reduce the second value of z to $z=2ar/(a+r)$; and if the two convexities are equal, we shall have $z=r$. And if the distance d is not great enough to make the rays parallel, we shall have $z=rd/(d-r)$, which is the proposition I assumed in article 21 of the last Elucidation.

In the figure and in the inferences we made to solve the problem, we assumed that the lens was convex on both sides; but the formulas still give its general solution merely by carefully changing certain signs and subtracting certain terms as determined by each particular case.

If we assume, for example, that the lens is concave on the side of the object and convex on the other, and if we wish to make use of the second value for z, we have only to change the sign of the terms in which r occurs, because in this case the ray of the convexity BIK is negative, or is taken in a sense contrary to that on the basis of which we made the calculations that yielded the formula, and we shall have $z=-2ard/(ad-rd+2ar)$ or $2ard/(rd-ad-2ar)$.

But if we reverse this same lens, the sign of the terms in which the ray a occurs will need to be changed in the formula. Finally, if the lens is concave on both sides, we shall need to change the signs where rays r and a occur together, for the product of $-r$ and $-a$ yields $+ar$. Thus we shall have $z=2ard/(-ad-rd-2ar)$. And this value will always be negative and the point of convergence F will always be on the same side as the rays falling on the lens.

If we suppose that the lens is flat on the side turned toward the object and convex on the other, the ray r will then become infinite and it will be necessary to subtract, as nought, the term ad in which r does not occur from the second value for z, and for the same reason the term rd if we reverse the lens.

We see well enough what would have to be done if the lens were flat on one side and concave on the other.

Finally, if we assume that the rays falling on the lens converge, i.e., approach each other, the distance AB(d) will then be negative, and point A, toward which the rays tend in this case, will be on the same side as point F. Thus, by changing the sign of the terms in which d occurs, in the second value for z or in those of the particular cases just noted, we shall have the value we seek.

It is clear that if z is given with one of the two others, these equations will make the third known by isolating it from the others, as we have already done.

We clearly see, then, that the first two formulas or values for z give the general solution for all the different cases possible of the problem, assuming that the refraction of light entering glass from air has a ratio of 3 to 2. But if we want a formula whose refraction itself is indeterminate, such as m to n, so that m and n can be taken for any number we wish, we have only to name the sines CN and cQ of the angles of refraction (n/m)s instead of (2/3)s, and (m/n)t instead of (3/2)t in the proportions we formed to solve the problem; and by carrying out the calculation, we shall find by replacing m−n by p

$$\text{EF or } z = \frac{mnard - npaed \quad + mnare}{mpad + mprd - pped \quad + npre - mnar}$$

or ignoring the thickness e of the lens

$$z = \frac{nard}{pad + prd - nar}$$

It is evident that solved generally this problem alone contains, as it were, the whole science of dioptrics, which consists in determining the figure of lenses in order to converge the rays leaving objects and make them parallel, converging, and diverging, and, by making them pass through several lenses, enlarge or diminish their images as we wish. For regarding point F where the image of the object A is as the point A itself, and placing a convex lens below point F, or a concave lens above it so that the focus of the convex and the negative focus of the concave are at the same point F, the rays leaving these second lenses will be parallel, which is necessary for those with good vision to see objects distinctly. But because the object appears inverted when the rays have passed through the two lenses, the rays will converge on the axis if we add a third convex lens; and again regarding this new focus as point A of the object, its rays will be parallel leaving it, and the object will be righted and much larger if we add a fourth of the same convexity as the third so that the point A is at the focus of these latter two lenses.

I do not enter into the details of all this, and I have indeed given only some of the general corollaries that can be derived from the second formula in order to form others suited to different problems. My goal was only to illustrate the truth of what I said toward the end of the fifth chapter on method concerning the utility of algebra and analysis. A more detailed account of the corollaries derived from the general solution of the problem given by Guisnée, can be seen in the *Mémoires* of the *Académie* for the year 1704, where this learned geometer is not content to solve it only on the assumption that the lenses are cut by flat surfaces or circular arcs, but in general by any two curves of the same or different natures.

THE END

Translations of Latin and Greek passages

None of the Latin or Greek in *The Search After Truth* has Malebranche for its author. These texts, most from the Bible and, especially, from St. Augustine, are used entirely as aphoristic (not to say, cryptic) appeals to authority. While they usually add very little of substance to Malebranche's own text, it should be nonetheless reassuring to have their translations available here.

The translations are new, based on Malebranche's actual citations, for he sometimes corrupts the text, in various ways, and it is important to know how he understood what he was citing. References, on the other hand, are corrected: they are also completed, as necessary; they are not repeated below except to avoid ambiguity. G. Rodis-Lewis's edition of the *Recherche* in Malebranche's *Œuvres* (Paris, Gallimard, 1979), vol. 1, was of great help. A translation is not provided if it is given by Malebranche himself in an immediately adjacent location.

Abbreviations of Augustine's works:
GSJ Treatise on the Gospel of St. John
IS On the Immortality of the Soul
LCG Literal Commentary on Genesis (incomplete)
TR On the True Religion

xix [a] Nothing is more powerful than that creature that is called a rational mind, nothing is more sublime.

Only the creator is above it. *GSJ* 23, 6.

Everyone agrees that only God is superior to the rational soul. Augustine, *IS* 13, 22.

[b] Not all things were made for this likeness, but only the rational substance, which is why all things were made through it, but the rational substance alone for it. Thus the rational substance was made both through and for it, without any nature coming between. *LGG* 16, 59–60.

Most rightly it is said that it is made in the image and likeness of God, for it would otherwise be unable to perceive mentally the immutable truth. Augustine, *TR* 44, 82.

xx [a] The mind, because it feels something only when purest and most blessed, adheres only to that truth which is called the image and likeness of the father and wisdom. *LCG*, 16, 60.

xxi [a] It is not an insignificant part of man, but the substance of the complete human whole. Ambrose, *Hexameron*, 6, 7.

xxii [a] Truth, you are everywhere present to those who consult you, and at the same time you respond to the questions of all who consult you. You respond clearly, but not all listen clearly. Everyone consults about what they want, but not all hear what they want.

[c] Internally, within thought's abode, the truth is neither in Hebrew, nor Greek, nor Latin, nor in any foreign language; it is without mouth or tongue, and without pronunciation of syllables.

[d] It seems as if he recedes from you when you recede from him. Augustine, *On the Psalms*, 25, 2, 3.

[e] For even the sun illumines the face both of the sighted and the blind; the sun is present for both, but with the sun present, one is absent. Likewise, the wisdom of God, the Lord Jesus Christ, is everywhere present, because everywhere there is truth, there is that wisdom. Augustine, *GSJ* 35, 4.

xxiii [a] For who, upon proper reflection, has not seen that he had better understood something the more he had been able to withdraw and lead the mind's attention from the body's senses? Augustine, *IS* 10, 17.

[b] The principle of intelligent creatures is eternal wisdom, because this principle, always immutable in belief, never ceases to speak with a secret summons to the creature of which it is the principle in order that the creature might turn to that from which it is; otherwise, it cannot reach its perfection or form. *LCG* 1, 5.

[c] We know that when He appears, we shall be like Him because we shall see Him as He is. *Treatise on the Epistle of St. John* 3, 2.

xxiv [a] Because it is corrupted, the body weighs down the soul.

[b] Its terrestrial abode burdens it with many thoughts, and with difficulty do we judge those about the earth or come upon those related to us.

[d] God, the intelligible light, in whom and by whom and through whom shines the intelligible light that intelligibly enlightens all things. Augustine, *Soliloquies*, 1, 1, 3.

Christ implied to us that the human soul and rational mind have neither life, nor illumination, nor happiness except from the substance itself of God. Augustine, *GSJ* 23, 5. No nature comes between. Augustine, *83 Various Questions*, 51.

[e] This authority must be said to be divine, because not only does it transcend every human faculty in terms of sensible signs, but acting in man it both shows him how it brought itself down because of him, and without affect-

ing the senses by which miracles are seen, it bids the intellect to emerge, showing at the same time how great its power is, why it acts in this way and how little it is esteemed. Augustine, *Concerning Order*, 2, 9.

[f] And if we knew Christ according to the flesh, now we do not know Him according to the flesh.

xxvii [a] Do not think that one man learns from another. We are able to admonish through the sound of our voice; if there were not an inner teacher, that sound would be in vain. Augustine, *GSJ* 3, 13.

Hearing is through me, understanding is through whom? Someone also spoke to your heart, but you do not see him. If you have understood, brothers, it is because your heart has also been spoken to. Understanding is the gift of God. Augustine, *GSJ* 40, 5.

xxviii [a] Do not think that you are your own light. Augustine, *On the Psalms*, 25, 11.

Not from me is there light, but in you and not otherwise. Augustine, *Sermons*, 67, 5, 8.

[b] I judge according to what I hear, and my judgment is just because I do not seek my will.

xxix The senses are utterly irresistible; any discipline is most sacred if through the senses we take pleasure in the infliction of wounds on us. *Letter to Nebridium*, 7, 3, 7.

[a] Pray and act as he may in order to be worthy, whoever does not see this should turn, not to disputatious man in order to ordain what he does not ordain, but to God the Savior in order that he who is not saved may be saved. *Letter*, 147, 12, 129.

[b] And in supplication let him pay attention to him who kindles the light of the mind so that it may understand. *Against the Letter of Foundations*, 38.

21 [b] God in the beginning set up man and left him in the hands of His counsel, gave him His laws and commands, etc.

81 For the stupid love and admire everything they see hidden under distorted words and regard as true all that is able to please the ears and that is tinged with fine sound. Lucretius, *De rerum natura*, 1, 5, 641–4.

92 [a] Wine is a cunning wrestler. *The Imposter*, 5, 1, 5–6.

93 What might drink not produce? It discloses secrets, it promises to fulfil hopes, it pushes the coward into battle, relieves the burden from anxious souls, and teaches the arts. The flowing cup—whom does it not make eloquent? Whom has it not freed even in paralysing poverty? Horace, *Epistles*, 1, 5, 16–20.

95 In Athens the air is light, from which the Athenians are thought to be acute, while in Thebes it is heavy. Cicero, *De Fato*, 4, 7.

You have the hearts of an Abderan plebian. Martial, *Epigrams*, 10, 25, 4.
You would have sworn he was born in the heavy air of Boetia. Horace, *Epistles*, 2, 1, 244.
[a] Is there no more wisdom in Teman?

99 Do not suppose that the clear lights of the eyes were made in order for us to see, or that the ends of the calves and thighs were placed on the feet in order to be bent and enable us to walk with long steps, that the forearms were then adapted to the strong upper arms and endowed each with a hand in order for us to do what is necessary for life. All and every such thing advanced of this kind is based on inverted reasoning, because nothing is born in the body in order for us to make use of it, but that which is born creates the use. Lucretius, *De rerum natura*, 4, 824–35.

123 Our parents' age, worse than our grandparents', has produced us who are less worthy and whose lot is soon to produce an even more wicked offspring. Horace, *Odes*, 3, 6, 46–8.

128 By giving heavenly delight to the mind by which every terrestrial delight is surpassed. Augustine, *Sermons*, 42, 3, 3.

129 He who spares the rod hates his son.

136 All perceptions, as well of the sense as of the mind, are according to the measure of the individual, and not according to the measure of the universe. And the human understanding is like a false mirror, which receiving rays irregularly, distorts, and disorders the nature of things by mingling its own nature with it. Bacon, *New organon*, 1, 41.

138 [a] Illustrious because of his obscure speech. Lucretius, *De rerum natura*, 1, 639.

139 [a] Truth is the daughter of time, not of authority. Bacon, *New organon*, 2, 84.

141 Knowledge puffeth up.

144 This question is contested in the schools with good conjectures on both sides, namely, whether Aristotle took the soul to be immortal or not. And, indeed, philosophers, and not the least of them, have asserted that Aristotle postulated that our souls are immune to death. These are, among the Latin and Greek commentators, both of the Amonius, Olympiodorus… and most importantly, the disciple of Aristotle, Theophrastus, who was in a position to understand thoroughly the mind of his master, both from his mouth and from his pen.

Against these are opposed not a few Fathers and not the least of philosophers…Most of these have been led to the interpretation that Aristotle thought our soul perishable by his student Alexander of Aphrodisias, who was accustomed to interpreting Aristotle's thought, although he was excused by Eugubinus. And, indeed, where Alexander seems to have inferred mortality, from book twelve of the *Metaphysics*, St. Thomas and Theodore Metochyte of course inferred immortality.

Furthermore, I think that Tertullian was of two minds on this matter and thought that Aristotle was ambiguous. Thus he cites him in support of both views. For, although he here ascribes to Aristotle the mortality of the soul, nevertheless he cites book one of *De anima* for the opposite view of immortality. Plutarch was of the same opinion, invoking the same philosopher for either opinion in book five of *De Placitis Philosophis*... Among the scholastics, who judge that Aristotle took a neutral stance and was doubtful and of two minds, there are Scotus...and other recent interpreters. This intermediary assessment I take to be the truer one, but the law of the school forbids saying so lest the recommended view not be based on the balanced weight of authorities.

148 He brought them to completion, because none of those who have followed him up to our own time, a period of fifteen hundred years, has added anything; nor will you find in his words the least error, and that such a virtue should be found in a single individual is strange and miraculous; when such a description is true of one man, he is worthy to be divine rather than human.

On the generation of animals: We praise God who distinguished this man in perfection from all others and gave him the greatest human dignity, which no man in any age is able to attain... Aristotle's doctrine is the highest truth, because his understanding was at the human limit of understanding—which is why it is said of him that he was created and given to us by divine providence in order that we might not be ignorant of whatever it is possible to know.

148–9 Aristotle was the prince to whom all the learned who followed him owe their accomplishments; they were permitted to differ among themselves in the interpretation of his words and in the inferences they drew from them.

149 My aim, readers, is, if health and strength suffice, to explain the definitions, postulates, common notions and first eight propositions of the first book of [Euclid's] *Elements* and to leave the rest to my successors. Through the grace of God, I have kept my promise...H. Savile.

162 The sad despise those who laugh, and the merry despise him who is sad. The lively despise the inactive, and the mediocre despise the skilled and adroit. Horace, *Epistles*, 1, 18, 89–90.

174 [b] I have even seen many who, after having greatly yearned to follow him, abandoned their reading of him, with nothing gained beyond sweat and use-

less fatigue of the soul. Thus, he who wished to be called "the obscure" and to appear worthy of the name, got what he wanted so effectively through his own efforts and was able to achieve his objective, that I would venture to swear frankly that, until now, there has never been anyone able to swear to having completely read, much less understood, this little book from beginning to end. Claude Saumaise, *Commentary on Tertullian's De Pallio*, unpaginated dedicatory epistle.

177 It does not matter how many spears are thrown against him, for he is penetrable to none. In the way that the hardness of certain stones is impregnable to iron, as diamond cannot be divided, cut or worn away but instead deflects what comes up against it, as rocks break the high seas without showing any signs of the storms endured over the centuries, so the soul of the wise man is firm and has gathered such strength that it is as secure from harm as the things I have listed. Seneca, ch. 5.

180 You shall be as gods. *Genesis* 3:5
[b] The wisdom of this world is foolishness before God.

182 Pride is the beginning of sin. Ecclesiastes 10:15.
[a] Little in philosophy is precise.
[b] You would like him to have spoken with his own intelligence and the judgment of another.
[c] If he had rejected some things, he would be confirmed by the agreement of the learned rather than by the love of the young.

186 [a] I am your fellow servant...worship God. Revelation 19:10.

208 The reason why men especially and horses occasionally are heteroglaucous is the same as the reason why man alone grows gray and the horse is the only other animal whose hairs whiten visibly in old age. Aristotle, *De generatione animalium*, 5, 1, 78063–5 (trans. J. A. Smith and W. O. Ross). See also translation of p. 148 above.

208–9 The learner should take things on trust. Aristotle, *De Sophisticis elenchis*, 2, 165 b3.

214 Jeremiah 12:11.

224 [a] I judge better the things that I see with my eyes to the extent that they are closer in nature to those I understand with my soul. *TR* 31, 57. See translation p. xxiii above.

229 [b] Since the essence of God has in it whatever there is of perfection in every other thing, and more besides, God is able by Himself to know every individual thing in His own thought. For the individual nature of a thing consists in the fact that to some extent it participates in the nature of God. Thomas Aquinas, *Summa theologica*, 1, 14, 6.

231 [a] We are unable to think something by ourselves, as if from ourselves, but our ability is from God. 2 Corinthians 3:5.

[b] God showed it to them. Romans 1:19.

[c] The Father of lights. James 1:17.

[d] Who teaches men wisdom. Psalms 93:10.

[e] The true light which illumines every man coming into this world. John 1:9.

232–3 See translation p. xxiv, note d above.

233 Even while turned from it, the impious are to some extent touched by the light of unchangeable truth. This is how even the impious think of eternity and correctly praise and blame many things in human morality. But by what rules do they judge these things, may I ask, if not by those in which they see how everyone should live, even if they themselves do not live in this way? Where do they see these rules? Not in their own nature, for while they are seen by the mind itself, their minds are unstable, and the immutability of the rules is seen by anyone with the power to see it in them...where are they written, then, if not in the book of that light which is called truth, where every just law is described...in which is seen what should be done even by him who does what is wrong and turns away from this light by which he is nonetheless touched.

237 [a] He governs human minds with no nature in between. *TR* 55, 113.

246 He who is the examiner of His majesty will be overwhelmed by His glory. Proverbs 25:27.

266 You love all things that are and despised nothing you have made; for you did not make and set up what you despised. How, moreover, could something endure unless you wished it, or be conserved unless called into being by you. Wisdom 11:25–6.

309 If our hope in Christ is for this life alone, we are the most miserable of men. 1 Corinthians 15:19.

For all the saints and the righteous, supported by divine help in constant torments, are said to be blessed in the hope of that end by which they in the end will be blessed. For if with all their virtues they were always in these torments and terrible pains, no sane reason would doubt that they were unhappy.

319 [b] God knows perfectly His own essence. From this it follows that He knows it in every way that it is knowable. Moreover, it can be known, not only as it is in itself, but as it can be participated in according to some mode of resemblance to creatures. Each creature has its own species according to its participation, in some way, in the resemblance of the divine essence. Thus, insofar as God knows His own essence as allowing imitation by a

creature of a certain sort, He knows it as the nature and idea proper to that creature, and similarly for all others. Thomas Aquinas, *Summa Theologica*, 1, 15, 2.

323 Under a just God, no one can be unhappy unless he deserves to be. Augustine, Incomplete [*sic*] work, *Against the Second Reply of Julian.*

341 [a] Judge yourself blessed when all your joy springs from you, since in those that men clutch at, or seek, or care for, you will not find—I do not say what you prefer—but what you wish. Seneca, *Letter to Lucilius.* 124, 24.

447 Honor and glory to God alone. 1 Timothy 1:17.

[a] For I do not think that this body is animated by the soul except by the intention of its maker and I judge that it undergoes anything only according to Him, and that it acts on and in the body as if divinely subjected to its domination. *De Musica*, 6, 5.

452 He always brings about what he has once decreed. Seneca, *On Providence*, 5, 8.

[a] This is the Christian religion, my brothers, which is preached throughout the whole world to the horror of its enemies who complain of their lack of hegemony—this is the Christian religion that adores one God, not many, because only one God makes the soul happy. *GSJ.* 23, 5.

555 In these ways, therefore, when God acts in the rational soul, in order that it might believe in Him—for it cannot believe in just anything by means of its free will unless some calling or conviction gives it belief—God works in man His will to believe and His mercy precedes us in all things; but to accede to God's call, or to reject it, is as I have said a matter of the will.

561 Lest we be entirely silent when asked, why three? we say that they are three. When it is asked, why three? human speech is absolutely overcome. It is said, nevertheless, that there are three persons, not in order to say it, but not to be silent.

563 [a] Most assuredly, he left him to do what he wished. *De correptione et gratia*, 12, 38.

591 Whatever Adam called each living thing, that was the name thereof. Genesis 2:19.

[b] He gave names to all things.

596 [b] You have made me serve with your sins.

599 [a] Just as sin was introduced into this world by one man.

[b] I was conceived in indignity and my mother conceived me in sin. The beginning of sin was with woman and through her shall we all die.

609 [a] Afterwards, having lapsed into the dogma of the Montanists, he recalled the

new prophecy in many books, because of the envy and insults of the clerics of the Roman church. St. Jerome.

613 [a] If we both see the truth of what you say and we both see the truth of what I say, where do we see it? I ask. I do not see it in you nor do you see it in me, but we both see it in that immutable truth that is above our minds.

617 [a] Nature cannot separate the just from the iniquitous. Horace, *Satires* 1, 3, 113.
[c] Now, therefore, inhabitants of Jerusalem and men of Judea, judge between me and my vine.

628 The darkness of our corruption obscures from us the incorruptible light with the result that it can be seen to a certain extent, but not as it is in itself, thus showing how distant it is. If the mind did not see it, the mind would not see that it is distant. If the mind saw it perfectly, moreover, it would not see it as if through this darkness. Therefore, because the mind does not entirely see or fail to see, it is right to say that God is seen from a distance. St Gregory.

630 [a] He said that it is inaccessible to every man of human sensibility. Sacred Scripture typically calls by the name of humanity all partisans of the flesh.
[d] Wisdom is not found in the land of those living with pleasure.

631 [d] The natural man does not perceive the things of the spirit of God, for they are foolishness to him. 1 Corinthians 2:14. It was said to Moses, man cannot see me and live, which is to say, no one can ever see God spiritually who lives carnally in the world. St Gregory.

637 [b] But I do not judge myself. For I know nothing by myself, but I am not thereby justified, but he who judges me is the Lord.

650 [a] You will love the Lord your God with your whole heart, and your whole soul, and with your whole strength.

669 [a] No one has from himself anything but sin and lies. 2 *Council of Orange*, Canon 22.

672 Let the earth produce living grass; let the waters produce living animals that fly and that crawl. Genesis 1:11, 20–1. Increase and multiply, and fill the waters of the earth, and let the birds multiply on the earth. Genesis 1:22.

I am the Lord who does all, who alone extends the heavens, and supports the earth, with no one with me. Isaiah 44:24. Your hands have made me and completely fashioned me in all my parts. Job 10:8. I do not know how you have appeared in my womb…I myself have not made your limbs, but it is the creator of the world who controls the birth of man, etc. Machabees 1:2, 7:22–3. Since it is God Himself who gives life, breath, and everything to all. Acts 17:25. Producing grass for the beast and plants for the use of men so that you should bring forth bread from the earth. Psalms 103.

[d] For he forgot his own strength. Wisdom 16:23.

675 God tailored the Scriptures to the level of children and babes at the breast. Augustine, *Commentaries on the Psalms*, 8, 8.

[b] We say that all miracles are against nature, but they are not. For how is what is done by the will of God against nature, since the will of so great a creator is the nature of each thing? A miracle, therefore, is not against nature, but against what is known of nature. Augustine, *City of God.*

677 [c] The sun and man generate man.

[d] Neither he who has intercourse nor he who sows his seed is anything, but only God who gives form...For it is He through His operation which continues to the present who brings it about that the seeds unfold in their number, and from their invisible folds into the visible forms of this beauty that we see.

See also translations for p. 672.

681 You will love the Lord your God with your whole heart, and with your whole soul, and with your whole strength. You will fear the Lord your God and serve Him alone. Deuteronomy 6:5.

[c] Therefore, you do nothing, most ungrateful of mortals, who claim not to owe anything to God but only to nature, because nature is not without God, nor God without nature, for they are the same; they are together, without difference. If you say that you owe the benefit you have received from Seneca to Annaeus or Lucius, you change not the creditor but the name.

682 [a] I am the Lord, and there is no other; I fashion the light and the dark; I make peace and create evil; I am the Lord who does all.

684 [a] The Egyptians themselves, whom we laugh at, consecrated no beast unless for some utility they derived from it.

685 Slaves, obey your masters according to the flesh with fear and trembling in the simplicity of your hearts as if it were Christ, not to be pleasing in the eyes of men, but as servants of Christ, to do the will of God with your soul in serving with good will as if for God and not for men. Ephesians 6:5–6.

[c] If we call a man father, we honor his age, but do not indicate him as the author of our life. St. Jerome, *Commentary on the Gospel of St. Matthew.*

742 And God saw all the things that He had made, and they were very good. Genesis 1:31.

TML

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